

For Paperwork Reduction Act Notice, see the separate instructions. Cat No 11282Y Form **990** (2016)

Part III Statement of Program Service AccomplishmentsCheck if Schedule O contains a response or note to any line in this Part III ☐ ☒**1** Briefly describe the organization's mission:

MEDICAL RESEARCH ORGANIZATION VAN ANDEL RESEARCH INSTITUTE IS AN INDEPENDENT BIOMEDICAL RESEARCH ORGANIZATION COMMITTED TO IMPROVING THE HEALTH AND ENHANCING THE LIVES OF CURRENT AND FUTURE GENERATIONS

2 Did the organization undertake any significant program services during the year which were not listed on the prior Form 990 or 990-EZ? ☐ Yes ☒ No

If "Yes," describe these new services on Schedule O

3 Did the organization cease conducting, or make significant changes in how it conducts, any program services? ☐ Yes ☒ No

If "Yes," describe these changes on Schedule O

4 Describe the organization's program service accomplishments for each of its three largest program services, as measured by expenses. Section 501(c)(3) and 501(c)(4) organizations are required to report the amount of grants and allocations to others, the total expenses, and revenue, if any, for each program service reported.

4a	(Code) (Expenses \$ 9,117,655 including grants of \$ 326,109) (Revenue \$ 162,826)
	See Additional Data

4b	(Code) (Expenses \$ 9,673,133 including grants of \$ 631,077) (Revenue \$ 25,843)
	See Additional Data

4c	(Code) (Expenses \$ 6,249,490 including grants of \$ 45,835) (Revenue \$ 286,150)
	See Additional Data

	(Code) (Expenses \$ 28,176,737 including grants of \$ 9,000) (Revenue \$ 648,048)
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4d	Other program services (Describe in Schedule O)
	(Expenses \$ 28,176,737 including grants of \$ 9,000) (Revenue \$ 648,048)

4e	Total program service expenses ▶ 53,217,015
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Part IV Checklist of Required Schedules

	Yes	No
1 Is the organization described in section 501(c)(3) or 4947(a)(1) (other than a private foundation)? If "Yes," complete Schedule A 	1 Yes	
2 Is the organization required to complete Schedule B, Schedule of Contributors (see instructions)? 	2 Yes	
3 Did the organization engage in direct or indirect political campaign activities on behalf of or in opposition to candidates for public office? If "Yes," complete Schedule C, Part I 	3	No
4 Section 501(c)(3) organizations. Did the organization engage in lobbying activities, or have a section 501(h) election in effect during the tax year? If "Yes," complete Schedule C, Part II 	4 Yes	
5 Is the organization a section 501(c)(4), 501(c)(5), or 501(c)(6) organization that receives membership dues, assessments, or similar amounts as defined in Revenue Procedure 98-19? If "Yes," complete Schedule C, Part III 	5	No
6 Did the organization maintain any donor advised funds or any similar funds or accounts for which donors have the right to provide advice on the distribution or investment of amounts in such funds or accounts? If "Yes," complete Schedule D, Part I 	6	No
7 Did the organization receive or hold a conservation easement, including easements to preserve open space, the environment, historic land areas, or historic structures? If "Yes," complete Schedule D, Part II 	7	No
8 Did the organization maintain collections of works of art, historical treasures, or other similar assets? If "Yes," complete Schedule D, Part III 	8	No
9 Did the organization report an amount in Part X, line 21 for escrow or custodial account liability, serve as a custodian for amounts not listed in Part X, or provide credit counseling, debt management, credit repair, or debt negotiation services? If "Yes," complete Schedule D, Part IV 	9	No
10 Did the organization, directly or through a related organization, hold assets in temporarily restricted endowments, permanent endowments, or quasi-endowments? If "Yes," complete Schedule D, Part V 	10 Yes	
11 If the organization's answer to any of the following questions is "Yes," then complete Schedule D, Parts VI, VII, VIII, IX, or X as applicable		
a Did the organization report an amount for land, buildings, and equipment in Part X, line 10? If "Yes," complete Schedule D, Part VI 	11a Yes	
b Did the organization report an amount for investments—other securities in Part X, line 12 that is 5% or more of its total assets reported in Part X, line 16? If "Yes," complete Schedule D, Part VII 	11b	No
c Did the organization report an amount for investments—program related in Part X, line 13 that is 5% or more of its total assets reported in Part X, line 16? If "Yes," complete Schedule D, Part VIII 	11c	No
d Did the organization report an amount for other assets in Part X, line 15 that is 5% or more of its total assets reported in Part X, line 16? If "Yes," complete Schedule D, Part IX 	11d Yes	
e Did the organization report an amount for other liabilities in Part X, line 25? If "Yes," complete Schedule D, Part X 	11e Yes	
f Did the organization's separate or consolidated financial statements for the tax year include a footnote that addresses the organization's liability for uncertain tax positions under FIN 48 (ASC 740)? If "Yes," complete Schedule D, Part X 	11f Yes	
12a Did the organization obtain separate, independent audited financial statements for the tax year? If "Yes," complete Schedule D, Parts XI and XII 	12a	No
b Was the organization included in consolidated, independent audited financial statements for the tax year? If "Yes," and if the organization answered "No" to line 12a, then completing Schedule D, Parts XI and XII is optional 	12b Yes	
13 Is the organization a school described in section 170(b)(1)(A)(ii)? If "Yes," complete Schedule E	13	No
14a Did the organization maintain an office, employees, or agents outside of the United States?	14a Yes	
b Did the organization have aggregate revenues or expenses of more than \$10,000 from grantmaking, fundraising, business, investment, and program service activities outside the United States, or aggregate foreign investments valued at \$100,000 or more? If "Yes," complete Schedule F, Parts I and IV 	14b Yes	
15 Did the organization report on Part IX, column (A), line 3, more than \$5,000 of grants or other assistance to or for any foreign organization? If "Yes," complete Schedule F, Parts II and IV 	15 Yes	
16 Did the organization report on Part IX, column (A), line 3, more than \$5,000 of aggregate grants or other assistance to or for foreign individuals? If "Yes," complete Schedule F, Parts III and IV 	16	No
17 Did the organization report a total of more than \$15,000 of expenses for professional fundraising services on Part IX, column (A), lines 6 and 11e? If "Yes," complete Schedule G, Part I (see instructions) 	17	No
18 Did the organization report more than \$15,000 total of fundraising event gross income and contributions on Part VIII, lines 1c and 8a? If "Yes," complete Schedule G, Part II 	18 Yes	
19 Did the organization report more than \$15,000 of gross income from gaming activities on Part VIII, line 9a? If "Yes," complete Schedule G, Part III 	19	No

Part IV Checklist of Required Schedules (continued)

	Yes	No
20a Did the organization operate one or more hospital facilities? <i>If "Yes," complete Schedule H</i>		No
b If "Yes" to line 20a, did the organization attach a copy of its audited financial statements to this return?		
21 Did the organization report more than \$5,000 of grants or other assistance to any domestic organization or domestic government on Part IX, column (A), line 1? <i>If "Yes," complete Schedule I, Parts I and II</i>	Yes	
22 Did the organization report more than \$5,000 of grants or other assistance to or for domestic individuals on Part IX, column (A), line 2? <i>If "Yes," complete Schedule I, Parts I and III</i>	Yes	
23 Did the organization answer "Yes" to Part VII, Section A, line 3, 4, or 5 about compensation of the organization's current and former officers, directors, trustees, key employees, and highest compensated employees? <i>If "Yes," complete Schedule J</i>	Yes	
24a Did the organization have a tax-exempt bond issue with an outstanding principal amount of more than \$100,000 as of the last day of the year, that was issued after December 31, 2002? <i>If "Yes," answer lines 24b through 24d and complete Schedule K. If "No," go to line 25a</i>	Yes	
b Did the organization invest any proceeds of tax-exempt bonds beyond a temporary period exception?		No
c Did the organization maintain an escrow account other than a refunding escrow at any time during the year to defease any tax-exempt bonds?		No
d Did the organization act as an "on behalf of" issuer for bonds outstanding at any time during the year?		No
25a Section 501(c)(3), 501(c)(4), and 501(c)(29) organizations. Did the organization engage in an excess benefit transaction with a disqualified person during the year? <i>If "Yes," complete Schedule L, Part I</i>		No
b Is the organization aware that it engaged in an excess benefit transaction with a disqualified person in a prior year, and that the transaction has not been reported on any of the organization's prior Forms 990 or 990-EZ? <i>If "Yes," complete Schedule L, Part I</i>		No
26 Did the organization report any amount on Part X, line 5, 6, or 22 for receivables from or payables to any current or former officers, directors, trustees, key employees, highest compensated employees, or disqualified persons? <i>If "Yes," complete Schedule L, Part II</i>		No
27 Did the organization provide a grant or other assistance to an officer, director, trustee, key employee, substantial contributor or employee thereof, a grant selection committee member, or to a 35% controlled entity or family member of any of these persons? <i>If "Yes," complete Schedule L, Part III</i>		No
28 Was the organization a party to a business transaction with one of the following parties (see Schedule L, Part IV instructions for applicable filing thresholds, conditions, and exceptions) a A current or former officer, director, trustee, or key employee? <i>If "Yes," complete Schedule L, Part IV</i>		No
b A family member of a current or former officer, director, trustee, or key employee? <i>If "Yes," complete Schedule L, Part IV</i>		No
c An entity of which a current or former officer, director, trustee, or key employee (or a family member thereof) was an officer, director, trustee, or direct or indirect owner? <i>If "Yes," complete Schedule L, Part IV</i>		No
29 Did the organization receive more than \$25,000 in non-cash contributions? <i>If "Yes," complete Schedule M</i>	Yes	
30 Did the organization receive contributions of art, historical treasures, or other similar assets, or qualified conservation contributions? <i>If "Yes," complete Schedule M</i>		No
31 Did the organization liquidate, terminate, or dissolve and cease operations? <i>If "Yes," complete Schedule N, Part I</i>		No
32 Did the organization sell, exchange, dispose of, or transfer more than 25% of its net assets? <i>If "Yes," complete Schedule N, Part II</i>		No
33 Did the organization own 100% of an entity disregarded as separate from the organization under Regulations sections 301.7701-2 and 301.7701-3? <i>If "Yes," complete Schedule R, Part I</i>	Yes	
34 Was the organization related to any tax-exempt or taxable entity? <i>If "Yes," complete Schedule R, Part II, III, or IV, and Part V, line 1</i>	Yes	
35a Did the organization have a controlled entity within the meaning of section 512(b)(13)?	Yes	
b If "Yes" to line 35a, did the organization receive any payment from or engage in any transaction with a controlled entity within the meaning of section 512(b)(13)? <i>If "Yes," complete Schedule R, Part V, line 2</i>	Yes	
36 Section 501(c)(3) organizations. Did the organization make any transfers to an exempt non-charitable related organization? <i>If "Yes," complete Schedule R, Part V, line 2</i>		No
37 Did the organization conduct more than 5% of its activities through an entity that is not a related organization and that is treated as a partnership for federal income tax purposes? <i>If "Yes," complete Schedule R, Part VI</i>		No
38 Did the organization complete Schedule O and provide explanations in Schedule O for Part VI, lines 11b and 19? Note. All Form 990 filers are required to complete Schedule O	Yes	

Part V Statements Regarding Other IRS Filings and Tax ComplianceCheck if Schedule O contains a response or note to any line in this Part V ☐

		Yes	No
1a	Enter the number reported in Box 3 of Form 1096 Enter -0- if not applicable	125	
b	Enter the number of Forms W-2G included in line 1a Enter -0- if not applicable	0	
c	Did the organization comply with backup withholding rules for reportable payments to vendors and reportable gaming (gambling) winnings to prize winners?		
2a	Enter the number of employees reported on Form W-3, Transmittal of Wage and Tax Statements, filed for the calendar year ending with or within the year covered by this return	449	
b	If at least one is reported on line 2a, did the organization file all required federal employment tax returns? Note. If the sum of lines 1a and 2a is greater than 250, you may be required to e-file (see instructions)	Yes	
3a	Did the organization have unrelated business gross income of \$1,000 or more during the year?	Yes	
b	If "Yes," has it filed a Form 990-T for this year? If "No" to line 3b, provide an explanation in Schedule O	Yes	
4a	At any time during the calendar year, did the organization have an interest in, or a signature or other authority over, a financial account in a foreign country (such as a bank account, securities account, or other financial account)?		No
b	If "Yes," enter the name of the foreign country See instructions for filing requirements for FinCEN Form 114, Report of Foreign Bank and Financial Accounts (FBAR)		
5a	Was the organization a party to a prohibited tax shelter transaction at any time during the tax year?		No
b	Did any taxable party notify the organization that it was or is a party to a prohibited tax shelter transaction?		No
c	If "Yes," to line 5a or 5b, did the organization file Form 8886-T?		
6a	Does the organization have annual gross receipts that are normally greater than \$100,000, and did the organization solicit any contributions that were not tax deductible as charitable contributions?		No
b	If "Yes," did the organization include with every solicitation an express statement that such contributions or gifts were not tax deductible?		
7	Organizations that may receive deductible contributions under section 170(c).		
a	Did the organization receive a payment in excess of \$75 made partly as a contribution and partly for goods and services provided to the payor?	Yes	
b	If "Yes," did the organization notify the donor of the value of the goods or services provided?	Yes	
c	Did the organization sell, exchange, or otherwise dispose of tangible personal property for which it was required to file Form 8282?		No
d	If "Yes," indicate the number of Forms 8282 filed during the year		
e	Did the organization receive any funds, directly or indirectly, to pay premiums on a personal benefit contract?		No
f	Did the organization, during the year, pay premiums, directly or indirectly, on a personal benefit contract?		No
g	If the organization received a contribution of qualified intellectual property, did the organization file Form 8899 as required?		
h	If the organization received a contribution of cars, boats, airplanes, or other vehicles, did the organization file a Form 1098-C?		
8	Sponsoring organizations maintaining donor advised funds. Did a donor advised fund maintained by the sponsoring organization have excess business holdings at any time during the year?		
9a	Did the sponsoring organization make any taxable distributions under section 4966?		
b	Did the sponsoring organization make a distribution to a donor, donor advisor, or related person?		
10	Section 501(c)(7) organizations. Enter		
a	Initiation fees and capital contributions included on Part VIII, line 12		
b	Gross receipts, included on Form 990, Part VIII, line 12, for public use of club facilities		
11	Section 501(c)(12) organizations. Enter		
a	Gross income from members or shareholders		
b	Gross income from other sources (Do not net amounts due or paid to other sources against amounts due or received from them)		
12a	Section 4947(a)(1) non-exempt charitable trusts. Is the organization filing Form 990 in lieu of Form 1041?		
b	If "Yes," enter the amount of tax-exempt interest received or accrued during the year		
13	Section 501(c)(29) qualified nonprofit health insurance issuers.		
a	Is the organization licensed to issue qualified health plans in more than one state? Note. See the instructions for additional information the organization must report on Schedule O		
b	Enter the amount of reserves the organization is required to maintain by the states in which the organization is licensed to issue qualified health plans		
c	Enter the amount of reserves on hand		
14a	Did the organization receive any payments for indoor tanning services during the tax year?		No
b	If "Yes," has it filed a Form 720 to report these payments? If "No," provide an explanation in Schedule O		

Part VI Governance, Management, and Disclosure For each "Yes" response to lines 2 through 7b below, and for a "No" response to lines 8a, 8b, or 10b below, describe the circumstances, processes, or changes in Schedule O. See instructions.Check if Schedule O contains a response or note to any line in this Part VI. ☒**Section A. Governing Body and Management**

		Yes	No
1a	Enter the number of voting members of the governing body at the end of the tax year	6	
If there are material differences in voting rights among members of the governing body, or if the governing body delegated broad authority to an executive committee or similar committee, explain in Schedule O			
b	Enter the number of voting members included in line 1a, above, who are independent	5	
2	Did any officer, director, trustee, or key employee have a family relationship or a business relationship with any other officer, director, trustee, or key employee?	Yes	
3	Did the organization delegate control over management duties customarily performed by or under the direct supervision of officers, directors or trustees, or key employees to a management company or other person?		No
4	Did the organization make any significant changes to its governing documents since the prior Form 990 was filed?		No
5	Did the organization become aware during the year of a significant diversion of the organization's assets?		No
6	Did the organization have members or stockholders?		No
7a	Did the organization have members, stockholders, or other persons who had the power to elect or appoint one or more members of the governing body?	Yes	
b	Are any governance decisions of the organization reserved to (or subject to approval by) members, stockholders, or persons other than the governing body?		No
8	Did the organization contemporaneously document the meetings held or written actions undertaken during the year by the following:		
a	The governing body?	Yes	
b	Each committee with authority to act on behalf of the governing body?	Yes	
9	Is there any officer, director, trustee, or key employee listed in Part VII, Section A, who cannot be reached at the organization's mailing address? If "Yes," provide the names and addresses in Schedule O.		No

Section B. Policies (This Section B requests information about policies not required by the Internal Revenue Code.)

		Yes	No
10a	Did the organization have local chapters, branches, or affiliates?		No
b	If "Yes," did the organization have written policies and procedures governing the activities of such chapters, affiliates, and branches to ensure their operations are consistent with the organization's exempt purposes?		
11a	Has the organization provided a complete copy of this Form 990 to all members of its governing body before filing the form?	Yes	
b	Describe in Schedule O the process, if any, used by the organization to review this Form 990.		
12a	Did the organization have a written conflict of interest policy? If "No," go to line 13.	Yes	
b	Were officers, directors, or trustees, and key employees required to disclose annually interests that could give rise to conflicts?	Yes	
c	Did the organization regularly and consistently monitor and enforce compliance with the policy? If "Yes," describe in Schedule O how this was done.	Yes	
13	Did the organization have a written whistleblower policy?	Yes	
14	Did the organization have a written document retention and destruction policy?	Yes	
15	Did the process for determining compensation of the following persons include a review and approval by independent persons, comparability data, and contemporaneous substantiation of the deliberation and decision?		
a	The organization's CEO, Executive Director, or top management official	Yes	
b	Other officers or key employees of the organization	Yes	
If "Yes" to line 15a or 15b, describe the process in Schedule O (see instructions)			
16a	Did the organization invest in, contribute assets to, or participate in a joint venture or similar arrangement with a taxable entity during the year?		No
b	If "Yes," did the organization follow a written policy or procedure requiring the organization to evaluate its participation in joint venture arrangements under applicable federal tax law, and take steps to safeguard the organization's exempt status with respect to such arrangements?		

Section C. Disclosure

17 List the States with which a copy of this Form 990 is required to be filed: MI

18 Section 6104 requires an organization to make its Form 1023 (or 1024 if applicable), 990, and 990-T (501(c)(3)s only) available for public inspection. Indicate how you made these available. Check all that apply.
☐ Own website ☐ Another's website ☒ Upon request ☐ Other (explain in Schedule O)

19 Describe in Schedule O whether (and if so, how) the organization made its governing documents, conflict of interest policy, and financial statements available to the public during the tax year.

20 State the name, address, and telephone number of the person who possesses the organization's books and records:
▶TIMOTHY J MYERS VP & CFO 333 BOSTWICK AVENUE NE GRAND RAPIDS, MI 495032518 (616) 234-5368

Part VII Compensation of Officers, Directors, Trustees, Key Employees, Highest Compensated Employees, and Independent ContractorsCheck if Schedule O contains a response or note to any line in this Part VII ☐**Section A. Officers, Directors, Trustees, Key Employees, and Highest Compensated Employees****1a** Complete this table for all persons required to be listed. Report compensation for the calendar year ending with or within the organization's tax year.

- List all of the organization's **current** officers, directors, trustees (whether individuals or organizations), regardless of amount of compensation. Enter -0- in columns (D), (E), and (F) if no compensation was paid.
- List all of the organization's **current** key employees, if any. See instructions for definition of "key employee."
- List the organization's five **current** highest compensated employees (other than an officer, director, trustee or key employee) who received reportable compensation (Box 5 of Form W-2 and/or Box 7 of Form 1099-MISC) of more than \$100,000 from the organization and any related organizations.
- List all of the organization's **former** officers, key employees, or highest compensated employees who received more than \$100,000 of reportable compensation from the organization and any related organizations.
- List all of the organization's **former directors or trustees** that received, in the capacity as a former director or trustee of the organization, more than \$10,000 of reportable compensation from the organization and any related organizations.

List persons in the following order: individual trustees or directors; institutional trustees; officers; key employees; highest compensated employees; and former such persons.

☐ Check this box if neither the organization nor any related organization compensated any current officer, director, or trustee

(A) Name and Title	(B) Average hours per week (list any hours for related organizations below dotted line)	(C) Position (do not check more than one box, unless person is both an officer and a director/trustee)						(D) Reportable compensation from the organization (W-2/1099-MISC)	(E) Reportable compensation from related organizations (W-2/1099-MISC)	(F) Estimated amount of other compensation from the organization and related organizations
		Individual trustee or director	Institutional Trustee	Officer	Key employee	Highest compensated employee	Former			
(1) DAVID VAN ANDEL CHAIRMAN / CEO	36 00 17 00	X		X				442,120	0	129,404
(2) DR GEORGE VANDE WOUDE TRUSTEE/INVESTIGATOR (ENDED 9/30/17)	45 00 0 00	X						302,486	0	28,328
(3) DR JAMES FAHNER TRUSTEE	1 00 1 00	X						10,000	2,000	0
(4) DR RALPH WEICHELBAUM TRUSTEE	1 00 0 00	X						9,000	0	0
(5) DR MAX WICHA TRUSTEE	1 00 0 00	X						4,500	0	0
(6) DR MICHELLE LEBEAU TRUSTEE	1 00 0 00	X						6,500	0	0
(7) DR TOM DEMEESTER TRUSTEE	1 00 0 00	X						6,500	0	0
(8) DR JANA HALL CHIEF OPERATIONS OFFICER	52 00 3 00			X				394,557	0	118,663
(9) TIMOTHY MYERS V P & CHIEF FINANCIAL OFFICER	50 00 3 00			X				298,609	0	85,683
(10) DR PETER JONES CHIEF SCIENTIFIC OFFICER & RES DIR	53 00 0 00				X			703,892	0	187,623
(11) KATHY VOGELSANG CHIEF INVESTMENT OFFICER	45 00 0 00					X		431,378	0	285,963
(12) DR PATRIK BRUNDIN ASSOCIATE RESEARCH DIRECTOR	45 00 0 00					X		476,236	0	101,475
(13) DR GERALD CALLAHAN V P, INNOVATIONS & COLLABORATIONS	45 00 0 00					X		349,955	0	103,683
(14) DR PETER LAIRD INVESTIGATOR	45 00 0 00					X		393,922	0	60,411
(15) DR GERD PFEIFER INVESTIGATOR	45 00 0 00					X		347,966	0	47,795
(16) DAVID WHITESCARVER FORMER SECRETARY/V P (ENDED 8/31/16)	0 00 0 00						X	367,546	0	61,794

[illegible]

2 Total number of individuals (including but not limited to those listed above) who received more than \$100,000 of reportable compensation from the organization ▶ 67

		Yes	No
3	Did the organization list any former officer, director or trustee, key employee, or highest compensated employee on line 1a? <i>If "Yes," complete Schedule J for such individual</i>	3 Yes	
4	For any individual listed on line 1a, is the sum of reportable compensation and other compensation from the organization and related organizations greater than \$150,000? <i>If "Yes," complete Schedule J for such individual</i>	4 Yes	
5	Did any person listed on line 1a receive or accrue compensation from any unrelated organization or individual for services rendered to the organization? <i>If "Yes," complete Schedule J for such person</i>	5	No

1 Complete this table for your five highest compensated independent contractors that received more than \$100,000 of compensation from the organization. Report compensation for the calendar year ending with or within the organization's tax year.

2 Total number of independent contractors (including but not limited to those listed above) who received more than \$100,000 of compensation from the organization ► 14

Part VIII Statement of RevenueCheck if Schedule O contains a response or note to any line in this Part VIII ☐

			(A) Total revenue	(B) Related or exempt function revenue	(C) Unrelated business revenue	(D) Revenue excluded from tax under sections 512-514
Contributions, Gifts, Grants and Other Similar Amounts	1a Federated campaigns . . .	1a				
	b Membership dues . . .	1b				
	c Fundraising events . . .	1c	63,224			
	d Related organizations	1d	45,881,651			
	e Government grants (contributions)	1e	14,303,760			
	f All other contributions, gifts, grants, and similar amounts not included above	1f	11,236,157			
	g Noncash contributions included in lines 1a-1f \$	7,335,360				
	h Total. Add lines 1a-1f	71,484,792				
Program Service Revenue			Business Code			
	2a RESEARCH BILLED REV		541700	1,122,867	1,048,997	73,870
	b _____					
	c _____					
	d _____					
	e _____					
	f All other program service revenue					
	g Total. Add lines 2a-2f	1,122,867				
Other Revenue	3 Investment income (including dividends, interest, and other similar amounts)		853,253			853,253
	4 Income from investment of tax-exempt bond proceeds					
	5 Royalties		1,306,364			1,306,364
			(i) Real	(ii) Personal		
	6a Gross rents		1,511,149			
	b Less rental expenses		1,525,162			
	c Rental income or (loss)		-14,013			
	d Net rental income or (loss)			-14,013		-14,013
			(i) Securities	(ii) Other		
	7a Gross amount from sales of assets other than inventory			162,311		
	b Less cost or other basis and sales expenses			21,932		
	c Gain or (loss)			140,379		
	d Net gain or (loss)			140,379		140,379
	8a Gross income from fundraising events (not including \$ 63,224 of contributions reported on line 1c) See Part IV, line 18		a	8,385		
	b Less direct expenses		b	19,000		
	c Net income or (loss) from fundraising events				-10,615	-10,615
	9a Gross income from gaming activities See Part IV, line 19		a			
	b Less direct expenses		b			
	c Net income or (loss) from gaming activities					
	10a Gross sales of inventory, less returns and allowances		a			
	b Less cost of goods sold		b			
	c Net income or (loss) from sales of inventory					
Miscellaneous Revenue		Business Code				
11a ALLOCATED ADMIN EXP		561000	7,001,053		7,001,053	
b IMPAIRMENT REVERSAL		900099	975,804		975,804	
c REIMBURSED EXPENSES		900099	81,088		81,088	
d All other revenue			125,869	23,224	102,645	
e Total. Add lines 11a-11d				8,183,814		
12 Total revenue. See Instructions				83,066,841	1,048,997	97,094
						10,435,958

Part IX Statement of Functional Expenses

Section 501(c)(3) and 501(c)(4) organizations must complete all columns. All other organizations must complete column (A).

Check if Schedule O contains a response or note to any line in this Part IX ☐**Do not include amounts reported on lines 6b, 7b, 8b, 9b, and 10b of Part VIII.**

	(A) Total expenses	(B) Program service expenses	(C) Management and general expenses	(D) Fundraising expenses
1 Grants and other assistance to domestic organizations and domestic governments. See Part IV, line 21.	609,014	609,014		
2 Grants and other assistance to domestic individuals. See Part IV, line 22.	258,471	258,471		
3 Grants and other assistance to foreign organizations, foreign governments, and foreign individuals. See Part IV, line 15 and 16.	144,536	144,536		
4 Benefits paid to or for members.				
5 Compensation of current officers, directors, trustees, and key employees.	2,801,906	1,079,504	1,722,402	
6 Compensation not included above, to disqualified persons (as defined under section 4958(f)(1)) and persons described in section 4958(c)(3)(B).				
7 Other salaries and wages.	27,698,120	16,972,685	10,165,866	559,569
8 Pension plan accruals and contributions (include section 401(k) and 403(b) employer contributions).	2,217,789	1,316,417	841,369	60,003
9 Other employee benefits.	1,509,663	908,098	559,563	42,002
10 Payroll taxes.	1,812,981	1,076,384	688,596	48,001
11 Fees for services (non-employees):				
a Management.				
b Legal.	296,531	35,364	261,167	
c Accounting.	83,518		83,518	
d Lobbying.	96,000		96,000	
e Professional fundraising services. See Part IV, line 17.				
f Investment management fees.				
g Other (If line 11g amount exceeds 10% of line 25, column (A) amount, list line 11g expenses on Schedule O).	2,285,220	1,919,127	359,843	6,250
12 Advertising and promotion.	716,949	3,593	598,356	115,000
13 Office expenses.	158,259	53,465	104,789	5
14 Information technology.	280,909	110,214	170,695	
15 Royalties.				
16 Occupancy.	2,335,871	2,153,298	182,041	532
17 Travel.	717,382	487,725	217,538	12,119
18 Payments of travel or entertainment expenses for any federal, state, or local public officials.				
19 Conferences, conventions, and meetings.	272,625	213,030	58,621	974
20 Interest.	8,935,202	7,464,402	1,470,800	
21 Payments to affiliates.				
22 Depreciation, depletion, and amortization.	9,857,047	8,564,010	1,293,037	
23 Insurance.	537,287	342,428	194,859	
24 Other expenses. Itemize expenses not covered above (List miscellaneous expenses in line 24e. If line 24e amount exceeds 10% of line 25, column (A) amount, list line 24e expenses on Schedule O):				
a LAB SUPPLIES & SERVICES	4,361,004	4,361,004		
b EQUIPMENT & SOFTWARE	3,114,129	1,678,024	1,435,082	1,023
c CLINICAL TRIAL COST	1,258,125	1,258,125		
d OTHER SCIENTIFIC	1,016,840	1,016,840		
e All other expenses	2,176,288	1,191,257	979,827	5,204
25 Total functional expenses. Add lines 1 through 24e.	75,551,666	53,217,015	21,483,969	850,682
26 Joint costs. Complete this line only if the organization reported in column (B) joint costs from a combined educational campaign and fundraising solicitation. Check here ☐ if following SOP 98-2 (ASC 958-720).				

Part X Balance SheetCheck if Schedule O contains a response or note to any line in this Part IX ☐

				(A) Beginning of year		(B) End of year	
Assets	1	Cash—non-interest-bearing			1		
	2	Savings and temporary cash investments		239,338	2	8,597,139	
	3	Pledges and grants receivable, net		2,847,628	3	3,382,233	
	4	Accounts receivable, net		5,706,021	4	6,269,641	
	5	Loans and other receivables from current and former officers, directors, trustees, key employees, and highest compensated employees. Complete Part II of Schedule L.			5		
	6	Loans and other receivables from other disqualified persons (as defined under section 4958(f)(1)), persons described in section 4958(c)(3)(B), and contributing employers and sponsoring organizations of section 501(c)(9) voluntary employees' beneficiary organizations (see instructions). Complete Part II of Schedule L.			6		
	7	Notes and loans receivable, net		1,744,112	7	42,645	
	8	Inventories for sale or use			8		
	9	Prepaid expenses and deferred charges		1,072,977	9	1,194,778	
	10a	Land, buildings, and equipment—cost or other basis. Complete Part VI of Schedule D.	10a	284,530,723			
	b	Less: accumulated depreciation	10b	99,644,264	189,842,888	10c	184,886,459
	11	Investments—publicly traded securities			11		
	12	Investments—other securities. See Part IV, line 11		1,481,372	12	5,108,311	
	13	Investments—program-related. See Part IV, line 11			13		
	14	Intangible assets			14		
	15	Other assets. See Part IV, line 11		44,848,309	15	37,840,000	
16	Total assets. Add lines 1 through 15 (must equal line 34)		247,782,645	16	247,321,206		
Liabilities	17	Accounts payable and accrued expenses		55,795,065	17	49,184,301	
	18	Grants payable			18		
	19	Deferred revenue		767,586	19	1,340,635	
	20	Tax-exempt bond liabilities		220,000,000	20	219,722,640	
	21	Escrow or custodial account liability. Complete Part IV of Schedule D.			21		
	22	Loans and other payables to current and former officers, directors, trustees, key employees, highest compensated employees, and disqualified persons. Complete Part II of Schedule L			22		
	23	Secured mortgages and notes payable to unrelated third parties			23		
	24	Unsecured notes and loans payable to unrelated third parties			24		
	25	Other liabilities (including federal income tax, payables to related third parties, and other liabilities not included on lines 17-24). Complete Part X of Schedule D.		67,966,380	25	58,892,213	
	26	Total liabilities. Add lines 17 through 25		344,529,031	26	329,139,789	
Net Assets or Fund Balances	Organizations that follow SFAS 117 (ASC 958), check here ☒ and complete lines 27 through 29, and lines 33 and 34.						
	27	Unrestricted net assets		-100,300,385	27	-85,638,212	
	28	Temporarily restricted net assets		2,941,222	28	3,153,327	
	29	Permanently restricted net assets		612,777	29	666,302	
	Organizations that do not follow SFAS 117 (ASC 958), check here ☐ and complete lines 30 through 34.						
	30	Capital stock or trust principal, or current funds			30		
	31	Paid-in or capital surplus, or land, building or equipment fund			31		
	32	Retained earnings, endowment, accumulated income, or other funds			32		
	33	Total net assets or fund balances		-96,746,386	33	-81,818,583	
	34	Total liabilities and net assets/fund balances		247,782,645	34	247,321,206	

Part XI Reconciliation of Net AssetsCheck if Schedule O contains a response or note to any line in this Part XI ☒

1	Total revenue (must equal Part VIII, column (A), line 12)	1	83,066,841
2	Total expenses (must equal Part IX, column (A), line 25)	2	75,551,666
3	Revenue less expenses Subtract line 2 from line 1	3	7,515,175
4	Net assets or fund balances at beginning of year (must equal Part X, line 33, column (A))	4	-96,746,386
5	Net unrealized gains (losses) on investments	5	77,276
6	Donated services and use of facilities	6	
7	Investment expenses	7	
8	Prior period adjustments	8	
9	Other changes in net assets or fund balances (explain in Schedule O)	9	7,335,352
10	Net assets or fund balances at end of year Combine lines 3 through 9 (must equal Part X, line 33, column (B))	10	-81,818,583

Part XII Financial Statements and ReportingCheck if Schedule O contains a response or note to any line in this Part XII ☐

	Yes	No
1 Accounting method used to prepare the Form 990 ☐ Cash ☒ Accrual ☐ Other _____ If the organization changed its method of accounting from a prior year or checked "Other," explain in Schedule O		
2a Were the organization's financial statements compiled or reviewed by an independent accountant? If 'Yes,' check a box below to indicate whether the financial statements for the year were compiled or reviewed on a separate basis, consolidated basis, or both ☐ Separate basis ☐ Consolidated basis ☐ Both consolidated and separate basis		No
b Were the organization's financial statements audited by an independent accountant? If 'Yes,' check a box below to indicate whether the financial statements for the year were audited on a separate basis, consolidated basis, or both ☐ Separate basis ☒ Consolidated basis ☐ Both consolidated and separate basis	Yes	
c If "Yes," to line 2a or 2b, does the organization have a committee that assumes responsibility for oversight of the audit, review, or compilation of its financial statements and selection of an independent accountant? If the organization changed either its oversight process or selection process during the tax year, explain in Schedule O	Yes	
3a As a result of a federal award, was the organization required to undergo an audit or audits as set forth in the Single Audit Act and OMB Circular A-133?	Yes	
b If "Yes," did the organization undergo the required audit or audits? If the organization did not undergo the required audit or audits, explain why in Schedule O and describe any steps taken to undergo such audits	Yes	

Additional Data

Software ID:

Software Version:

EIN: 52-2000823

Name: VAN ANDEL RESEARCH INSTITUTE

Form 990 (2016)

Form 990, Part III, Line 4a:

CENTER FOR CANCER AND CELL BIOLOGY SCHEDULE O PROVIDES FURTHER INFORMATION REGARDING THIS PROGRAM'S ACCOMPLISHMENTS

Form 990, Part III, Line 4b:

CENTER FOR EPIGENETICS
SCHEDULE O PROVIDES FURTHER INFORMATION REGARDING THIS PROGRAM'S ACCOMPLISHMENTS

Form 990, Part III, Line 4c:

CENTER FOR NEURODEGENERATIVE SCIENCES
SEE SCHEDULE O FOR FURTHER INFORMATION ABOUT THIS PROGRAM'S ACCOMPLISHMENTS

SCHEDULE A
(Form 990 or
990EZ)

Department of the Treasury
Internal Revenue Service

Name of the organization
VAN ANDEL RESEARCH INSTITUTE

Public Charity Status and Public Support

Complete if the organization is a section 501(c)(3) organization or a section 4947(a)(1) nonexempt charitable trust.

▶ Attach to Form 990 or Form 990-EZ.

▶ Information about Schedule A (Form 990 or 990-EZ) and its instructions is at www.irs.gov/form990.

OMB No 1545-0047

2016

Open to Public Inspection

Employer identification number

52-2000823

Part I Reason for Public Charity Status (All organizations must complete this part.) See instructions.

The organization is not a private foundation because it is (For lines 1 through 12, check only one box.)

- 1 ☐ A church, convention of churches, or association of churches described in **section 170(b)(1)(A)(i)**.
- 2 ☐ A school described in **section 170(b)(1)(A)(ii)**. (Attach Schedule E (Form 990 or 990-EZ))
- 3 ☐ A hospital or a cooperative hospital service organization described in **section 170(b)(1)(A)(iii)**.
- 4 ☒ A medical research organization operated in conjunction with a hospital described in **section 170(b)(1)(A)(iii)**. Enter the hospital's name, city, and state
SPECTRUM HEALTH, GRAND RAPIDS, MI
- 5 ☐ An organization operated for the benefit of a college or university owned or operated by a governmental unit described in **section 170(b)(1)(A)(iv)**. (Complete Part II.)
- 6 ☐ A federal, state, or local government or governmental unit described in **section 170(b)(1)(A)(v)**.
- 7 ☐ An organization that normally receives a substantial part of its support from a governmental unit or from the general public described in **section 170(b)(1)(A)(vi)**. (Complete Part II.)
- 8 ☐ A community trust described in **section 170(b)(1)(A)(vi)**. (Complete Part II.)
- 9 ☐ An agricultural research organization described in **section 170(b)(1)(A)(ix)** operated in conjunction with a land-grant college or university or a non-land grant college of agriculture. See instructions. Enter the name, city, and state of the college or university.
- 10 ☐ An organization that normally receives (1) more than 33 1/3% of its support from contributions, membership fees, and gross receipts from activities related to its exempt functions—subject to certain exceptions, and (2) no more than 33 1/3% of its support from gross investment income and unrelated business taxable income (less section 511 tax) from businesses acquired by the organization after June 30, 1975. See **section 509(a)(2)**. (Complete Part III.)
- 11 ☐ An organization organized and operated exclusively to test for public safety. See **section 509(a)(4)**.
- 12 ☐ An organization organized and operated exclusively for the benefit of, to perform the functions of, or to carry out the purposes of one or more publicly supported organizations described in **section 509(a)(1)** or **section 509(a)(2)**. See **section 509(a)(3)**. Check the box in lines 12a through 12d that describes the type of supporting organization and complete lines 12e, 12f, and 12g.
- a ☐ **Type I.** A supporting organization operated, supervised, or controlled by its supported organization(s), typically by giving the supported organization(s) the power to regularly appoint or elect a majority of the directors or trustees of the supporting organization. **You must complete Part IV, Sections A and B.**
- b ☐ **Type II.** A supporting organization supervised or controlled in connection with its supported organization(s), by having control or management of the supporting organization vested in the same persons that control or manage the supported organization(s). **You must complete Part IV, Sections A and C.**
- c ☐ **Type III functionally integrated.** A supporting organization operated in connection with, and functionally integrated with, its supported organization(s) (see instructions). **You must complete Part IV, Sections A, D, and E.**
- d ☐ **Type III non-functionally integrated.** A supporting organization operated in connection with its supported organization(s) that is not functionally integrated. The organization generally must satisfy a distribution requirement and an attentiveness requirement (see instructions). **You must complete Part IV, Sections A and D, and Part V.**
- e ☐ Check this box if the organization received a written determination from the IRS that it is a Type I, Type II, Type III functionally integrated, or Type III non-functionally integrated supporting organization.
- f Enter the number of supported organizations _____
- g Provide the following information about the supported organization(s)

(i) Name of supported organization	(ii) EIN	(iii) Type of organization (described on lines 1-10 above (see instructions))	(iv) Is the organization listed in your governing document?		(v) Amount of monetary support (see instructions)	(vi) Amount of other support (see instructions)
			Yes	No		
Total						

Part II

Support Schedule for Organizations Described in Sections 170(b)(1)(A)(iv) and 170(b)(1)(A)(vi)
(Complete only if you checked the box on line 5, 7, 8, or 9 of Part I or if the organization failed to qualify under Part III. If the organization fails to qualify under the tests listed below, please complete Part III.)

Section A. Public Support						
Calendar year (or fiscal year beginning in) ▶	(a)2012	(b)2013	(c)2014	(d)2015	(e)2016	(f)Total
1 Gifts, grants, contributions, and membership fees received (Do not include any "unusual grant.")						
2 Tax revenues levied for the organization's benefit and either paid to or expended on its behalf						
3 The value of services or facilities furnished by a governmental unit to the organization without charge						
4 Total. Add lines 1 through 3						
5 The portion of total contributions by each person (other than a governmental unit or publicly supported organization) included on line 1 that exceeds 2% of the amount shown on line 11, column (f)						
6 Public support. Subtract line 5 from line 4						

Section B. Total Support						
Calendar year (or fiscal year beginning in) ▶	(a)2012	(b)2013	(c)2014	(d)2015	(e)2016	(f)Total
7 Amounts from line 4						
8 Gross income from interest, dividends, payments received on securities loans, rents, royalties and income from similar sources						
9 Net income from unrelated business activities, whether or not the business is regularly carried on						
10 Other income. Do not include gain or loss from the sale of capital assets (Explain in Part VI.)						
11 Total support. Add lines 7 through 10						
12 Gross receipts from related activities, etc. (see instructions)					12	
13 First five years. If the Form 990 is for the organization's first, second, third, fourth, or fifth tax year as a section 501(c)(3) organization, check this box and stop here ▶ ☐						

Section C. Computation of Public Support Percentage						
14 Public support percentage for 2016 (line 6, column (f) divided by line 11, column (f))					14	
15 Public support percentage for 2015 Schedule A, Part II, line 14					15	
16a 33 1/3% support test—2016. If the organization did not check the box on line 13, and line 14 is 33 1/3% or more, check this box and stop here . The organization qualifies as a publicly supported organization ▶ ☐						
b 33 1/3% support test—2015. If the organization did not check a box on line 13 or 16a, and line 15 is 33 1/3% or more, check this box and stop here . The organization qualifies as a publicly supported organization ▶ ☐						
17a 10%-facts-and-circumstances test—2016. If the organization did not check a box on line 13, 16a, or 16b, and line 14 is 10% or more, and if the organization meets the "facts-and-circumstances" test, check this box and stop here . Explain in Part VI how the organization meets the "facts-and-circumstances" test. The organization qualifies as a publicly supported organization ▶ ☐						
b 10%-facts-and-circumstances test—2015. If the organization did not check a box on line 13, 16a, 16b, or 17a, and line 15 is 10% or more, and if the organization meets the "facts-and-circumstances" test, check this box and stop here . Explain in Part VI how the organization meets the "facts-and-circumstances" test. The organization qualifies as a publicly supported organization ▶ ☐						
18 Private foundation. If the organization did not check a box on line 13, 16a, 16b, 17a, or 17b, check this box and see instructions ▶ ☐						

Part III Support Schedule for Organizations Described in Section 509(a)(2)

(Complete only if you checked the box on line 10 of Part I or if the organization failed to qualify under Part II. If the organization fails to qualify under the tests listed below, please complete Part II.)

Section A. Public Support

Calendar year (or fiscal year beginning in) ►	(a)2012	(b)2013	(c)2014	(d)2015	(e)2016	(f)Total
1 Gifts, grants, contributions, and membership fees received (Do not include any "unusual grants.")						
2 Gross receipts from admissions, merchandise sold or services performed, or facilities furnished in any activity that is related to the organization's tax-exempt purpose						
3 Gross receipts from activities that are not an unrelated trade or business under section 513						
4 Tax revenues levied for the organization's benefit and either paid to or expended on its behalf						
5 The value of services or facilities furnished by a governmental unit to the organization without charge						
6 Total. Add lines 1 through 5						
7a Amounts included on lines 1, 2, and 3 received from disqualified persons						
b Amounts included on lines 2 and 3 received from other than disqualified persons that exceed the greater of \$5,000 or 1% of the amount on line 13 for the year						
c Add lines 7a and 7b						
8 Public support. (Subtract line 7c from line 6.)						

Section B. Total Support

Calendar year (or fiscal year beginning in) ►	(a)2012	(b)2013	(c)2014	(d)2015	(e)2016	(f)Total
9 Amounts from line 6						
10a Gross income from interest, dividends, payments received on securities loans, rents, royalties and income from similar sources						
b Unrelated business taxable income (less section 511 taxes) from businesses acquired after June 30, 1975						
c Add lines 10a and 10b						
11 Net income from unrelated business activities not included in line 10b, whether or not the business is regularly carried on						
12 Other income. Do not include gain or loss from the sale of capital assets (Explain in Part VI.)						
13 Total support. (Add lines 9, 10c, 11, and 12.)						

14 First five years. If the Form 990 is for the organization's first, second, third, fourth, or fifth tax year as a section 501(c)(3) organization, check this box and **stop here** ☐

Section C. Computation of Public Support Percentage

15 Public support percentage for 2016 (line 8, column (f) divided by line 13, column (f))	15	
16 Public support percentage from 2015 Schedule A, Part III, line 15	16	

Section D. Computation of Investment Income Percentage

17 Investment income percentage for 2016 (line 10c, column (f) divided by line 13, column (f))	17	
18 Investment income percentage from 2015 Schedule A, Part III, line 17	18	

19a 33 1/3% support tests—2016. If the organization did not check the box on line 14, and line 15 is more than 33 1/3%, and line 17 is not more than 33 1/3%, check this box and **stop here**. The organization qualifies as a publicly supported organization ☐

b 33 1/3% support tests—2015. If the organization did not check a box on line 14 or line 19a, and line 16 is more than 33 1/3% and line 18 is not more than 33 1/3%, check this box and **stop here**. The organization qualifies as a publicly supported organization ☐

20 Private foundation. If the organization did not check a box on line 14, 19a, or 19b, check this box and see instructions ☐

Part IV Supporting Organizations

(Complete only if you checked a box on line 12 of Part I. If you checked 12a of Part I, complete Sections A and B. If you checked 12b of Part I, complete Sections A and C. If you checked 12c of Part I, complete Sections A, D, and E. If you checked 12d of Part I, complete Sections A and D, and complete Part V.)

Section A. All Supporting Organizations

	Yes	No
1 Are all of the organization's supported organizations listed by name in the organization's governing documents? <i>If "No," describe in Part VI how the supported organizations are designated. If designated by class or purpose, describe the designation. If historic and continuing relationship, explain.</i>	1	
2 Did the organization have any supported organization that does not have an IRS determination of status under section 509(a)(1) or (2)? <i>If "Yes," explain in Part VI how the organization determined that the supported organization was described in section 509(a)(1) or (2).</i>	2	
3a Did the organization have a supported organization described in section 501(c)(4), (5), or (6)? <i>If "Yes," answer (b) and (c) below.</i>	3a	
b Did the organization confirm that each supported organization qualified under section 501(c)(4), (5), or (6) and satisfied the public support tests under section 509(a)(2)? <i>If "Yes," describe in Part VI when and how the organization made the determination.</i>	3b	
c Did the organization ensure that all support to such organizations was used exclusively for section 170(c)(2)(B) purposes? <i>If "Yes," explain in Part VI what controls the organization put in place to ensure such use.</i>	3c	
4a Was any supported organization not organized in the United States ("foreign supported organization")? <i>If "Yes" and if you checked 12a or 12b in Part I, answer (b) and (c) below.</i>	4a	
b Did the organization have ultimate control and discretion in deciding whether to make grants to the foreign supported organization? <i>If "Yes," describe in Part VI how the organization had such control and discretion despite being controlled or supervised by or in connection with its supported organizations.</i>	4b	
c Did the organization support any foreign supported organization that does not have an IRS determination under sections 501(c)(3) and 509(a)(1) or (2)? <i>If "Yes," explain in Part VI what controls the organization used to ensure that all support to the foreign supported organization was used exclusively for section 170(c)(2)(B) purposes.</i>	4c	
5a Did the organization add, substitute, or remove any supported organizations during the tax year? <i>If "Yes," answer (b) and (c) below (if applicable). Also, provide detail in Part VI, including (i) the names and EIN numbers of the supported organizations added, substituted, or removed, (ii) the reasons for each such action, (iii) the authority under the organization's organizing document authorizing such action, and (iv) how the action was accomplished (such as by amendment to the organizing document).</i>	5a	
b Type I or Type II only. Was any added or substituted supported organization part of a class already designated in the organization's organizing document?	5b	
c Substitutions only. Was the substitution the result of an event beyond the organization's control?	5c	
6 Did the organization provide support (whether in the form of grants or the provision of services or facilities) to anyone other than (i) its supported organizations, (ii) individuals that are part of the charitable class benefited by one or more of its supported organizations, or (iii) other supporting organizations that also support or benefit one or more of the filing organization's supported organizations? <i>If "Yes," provide detail in Part VI.</i>	6	
7 Did the organization provide a grant, loan, compensation, or other similar payment to a substantial contributor (defined in section 4958(c)(3)(C)), a family member of a substantial contributor, or a 35% controlled entity with regard to a substantial contributor? <i>If "Yes," complete Part I of Schedule L (Form 990 or 990-EZ).</i>	7	
8 Did the organization make a loan to a disqualified person (as defined in section 4958) not described in line 7? <i>If "Yes," complete Part I of Schedule L (Form 990 or 990-EZ).</i>	8	
9a Was the organization controlled directly or indirectly at any time during the tax year by one or more disqualified persons as defined in section 4946 (other than foundation managers and organizations described in section 509(a)(1) or (2))? <i>If "Yes," provide detail in Part VI.</i>	9a	
b Did one or more disqualified persons (as defined in line 9a) hold a controlling interest in any entity in which the supporting organization had an interest? <i>If "Yes," provide detail in Part VI.</i>	9b	
c Did a disqualified person (as defined in line 9a) have an ownership interest in, or derive any personal benefit from, assets in which the supporting organization also had an interest? <i>If "Yes," provide detail in Part VI.</i>	9c	
10a Was the organization subject to the excess business holdings rules of section 4943 because of section 4943(f) (regarding certain Type II supporting organizations, and all Type III non-functionally integrated supporting organizations)? <i>If "Yes," answer line 10b below.</i>	10a	
b Did the organization have any excess business holdings in the tax year? <i>(Use Schedule C, Form 4720, to determine whether the organization had excess business holdings.)</i>	10b	

Part IV Supporting Organizations (continued)

	Yes	No
11 Has the organization accepted a gift or contribution from any of the following persons?		
a A person who directly or indirectly controls, either alone or together with persons described in (b) and (c) below, the governing body of a supported organization?		
b A family member of a person described in (a) above?		
c A 35% controlled entity of a person described in (a) or (b) above? <i>If "Yes" to a, b, or c, provide detail in Part VI</i>		
11a		
11b		
11c		

Section B. Type I Supporting Organizations

	Yes	No
1 Did the directors, trustees, or membership of one or more supported organizations have the power to regularly appoint or elect at least a majority of the organization's directors or trustees at all times during the tax year? <i>If "No," describe in Part VI how the supported organization(s) effectively operated, supervised, or controlled the organization's activities. If the organization had more than one supported organization, describe how the powers to appoint and/or remove directors or trustees were allocated among the supported organizations and what conditions or restrictions, if any, applied to such powers during the tax year.</i>		
1		
2 Did the organization operate for the benefit of any supported organization other than the supported organization(s) that operated, supervised, or controlled the supporting organization? <i>If "Yes," explain in Part VI how providing such benefit carried out the purposes of the supported organization(s) that operated, supervised or controlled the supporting organization.</i>		
2		

Section C. Type II Supporting Organizations

	Yes	No
1 Were a majority of the organization's directors or trustees during the tax year also a majority of the directors or trustees of each of the organization's supported organization(s)? <i>If "No," describe in Part VI how control or management of the supporting organization was vested in the same persons that controlled or managed the supported organization(s).</i>		
1		

Section D. All Type III Supporting Organizations

	Yes	No
1 Did the organization provide to each of its supported organizations, by the last day of the fifth month of the organization's tax year, (i) a written notice describing the type and amount of support provided during the prior tax year, (ii) a copy of the Form 990 that was most recently filed as of the date of notification, and (iii) copies of the organization's governing documents in effect on the date of notification, to the extent not previously provided?		
1		
2 Were any of the organization's officers, directors, or trustees either (i) appointed or elected by the supported organization(s) or (ii) serving on the governing body of a supported organization? <i>If "No," explain in Part VI how the organization maintained a close and continuous working relationship with the supported organization(s).</i>		
2		
3 By reason of the relationship described in (2), did the organization's supported organizations have a significant voice in the organization's investment policies and in directing the use of the organization's income or assets at all times during the tax year? <i>If "Yes," describe in Part VI the role the organization's supported organizations played in this regard.</i>		
3		

Section E. Type III Functionally-Integrated Supporting Organizations

1 Check the box next to the method that the organization used to satisfy the Integral Part Test during the year (see instructions)		
a ☐ The organization satisfied the Activities Test. Complete line 2 below.		
b ☐ The organization is the parent of each of its supported organizations. Complete line 3 below.		
c ☐ The organization supported a governmental entity. Describe in Part VI how you supported a government entity (see instructions).		
2 Activities Test Answer (a) and (b) below.		
a Did substantially all of the organization's activities during the tax year directly further the exempt purposes of the supported organization(s) to which the organization was responsive? <i>If "Yes," then in Part VI identify those supported organizations and explain how these activities directly furthered their exempt purposes, how the organization was responsive to those supported organizations, and how the organization determined that these activities constituted substantially all of its activities.</i>		
2a		
b Did the activities described in (a) constitute activities that, but for the organization's involvement, one or more of the organization's supported organization(s) would have been engaged in? <i>If "Yes," explain in Part VI the reasons for the organization's position that its supported organization(s) would have engaged in these activities but for the organization's involvement.</i>		
2b		
3 Parent of Supported Organizations Answer (a) and (b) below.		
a Did the organization have the power to regularly appoint or elect a majority of the officers, directors, or trustees of each of the supported organizations? <i>Provide details in Part VI.</i>		
3a		
b Did the organization exercise a substantial degree of direction over the policies, programs and activities of each of its supported organizations? <i>If "Yes," describe in Part VI the role played by the organization in this regard.</i>		
3b		

Part V Type III Non-Functionally Integrated 509(a)(3) Supporting Organizations

- 1** ☐ Check here if the organization satisfied the Integral Part Test as a qualifying trust on Nov. 20, 1970. **See instructions.** All other Type III non-functionally integrated supporting organizations must complete Sections A through E.

Section A - Adjusted Net Income

	(A) Prior Year	(B) Current Year (optional)
1 Net short-term capital gain	1	
2 Recoveries of prior-year distributions	2	
3 Other gross income (see instructions)	3	
4 Add lines 1 through 3	4	
5 Depreciation and depletion	5	
6 Portion of operating expenses paid or incurred for production or collection of gross income or for management, conservation, or maintenance of property held for production of income (see instructions)	6	
7 Other expenses (see instructions)	7	
8 Adjusted Net Income (subtract lines 5, 6 and 7 from line 4)	8	

Section B - Minimum Asset Amount

	(A) Prior Year	(B) Current Year (optional)
1 Aggregate fair market value of all non-exempt-use assets (see instructions for short tax year or assets held for part of year)	1	
a Average monthly value of securities	1a	
b Average monthly cash balances	1b	
c Fair market value of other non-exempt-use assets	1c	
d Total (add lines 1a, 1b, and 1c)	1d	
e Discount claimed for blockage or other factors (explain in detail in Part VI)		
2 Acquisition indebtedness applicable to non-exempt use assets	2	
3 Subtract line 2 from line 1d	3	
4 Cash deemed held for exempt use. Enter 1-1/2% of line 3 (for greater amount, see instructions)	4	
5 Net value of non-exempt-use assets (subtract line 4 from line 3)	5	
6 Multiply line 5 by .035	6	
7 Recoveries of prior-year distributions	7	
8 Minimum Asset Amount (add line 7 to line 6)	8	

Section C - Distributable Amount

		Current Year
1 Adjusted net income for prior year (from Section A, line 8, Column A)	1	
2 Enter 85% of line 1	2	
3 Minimum asset amount for prior year (from Section B, line 8, Column A)	3	
4 Enter greater of line 2 or line 3	4	
5 Income tax imposed in prior year	5	
6 Distributable Amount. Subtract line 5 from line 4, unless subject to emergency temporary reduction (see instructions)	6	
7 ☐ Check here if the current year is the organization's first as a non-functionally-integrated Type III supporting organization (see instructions)		

Part V

Type III Non-Functionally Integrated 509(a)(3) Supporting Organizations (continued)

Section D - Distributions	Current Year
1 Amounts paid to supported organizations to accomplish exempt purposes	
2 Amounts paid to perform activity that directly furthers exempt purposes of supported organizations, in excess of income from activity	
3 Administrative expenses paid to accomplish exempt purposes of supported organizations	
4 Amounts paid to acquire exempt-use assets	
5 Qualified set-aside amounts (prior IRS approval required)	
6 Other distributions (describe in Part VI) See instructions	
7 Total annual distributions. Add lines 1 through 6	
8 Distributions to attentive supported organizations to which the organization is responsive (provide details in Part VI) See instructions	
9 Distributable amount for 2016 from Section C, line 6	
10 Line 8 amount divided by Line 9 amount	

Section E - Distribution Allocations (see instructions)	(i) Excess Distributions	(ii) Underdistributions Pre-2016	(iii) Distributable Amount for 2016
1 Distributable amount for 2016 from Section C, line 6			
2 Underdistributions, if any, for years prior to 2016 (reasonable cause required--see instructions)			
3 Excess distributions carryover, if any, to 2016			
a			
b			
c From 2013.			
d From 2014.			
e From 2015.			
f Total of lines 3a through e			
g Applied to underdistributions of prior years			
h Applied to 2016 distributable amount			
i Carryover from 2011 not applied (see instructions)			
j Remainder Subtract lines 3g, 3h, and 3i from 3f			
4 Distributions for 2016 from Section D, line 7 \$			
a Applied to underdistributions of prior years			
b Applied to 2016 distributable amount			
c Remainder Subtract lines 4a and 4b from 4			
5 Remaining underdistributions for years prior to 2016, if any Subtract lines 3g and 4a from line 2 (if amount greater than zero, see instructions)			
6 Remaining underdistributions for 2016 Subtract lines 3h and 4b from line 1 (if amount greater than zero, see instructions)			
7 Excess distributions carryover to 2017. Add lines 3j and 4c			
8 Breakdown of line 7			
a			
b Excess from 2013.			
c Excess from 2014.			
d Excess from 2015.			
e Excess from 2016.			

Part VI **Supplemental Information.**

Provide the explanations required by Part II, line 10; Part II, line 17a or 17b; Part III, line 12; Part IV, Section A, lines 1, 2, 3b, 3c, 4b, 4c, 5a, 6, 9a, 9b, 9c, 11a, 11b, and 11c; Part IV, Section B, lines 1 and 2; Part IV, Section C, line 1; Part IV, Section D, lines 2 and 3; Part IV, Section E, lines 1c, 2a, 2b, 3a and 3b; Part V, line 1; Part V, Section B, line 1e; Part V Section D, lines 5, 6, and 8; and Part V, Section E, lines 2, 5, and 6. Also complete this part for any additional information. (See instructions).

Facts And Circumstances Test

SCHEDULE C
(Form 990 or 990-EZ)

Department of the Treasury
Internal Revenue Service

Political Campaign and Lobbying Activities

For Organizations Exempt From Income Tax Under section 501(c) and section 527
▶ **Complete if the organization is described below.** ▶ **Attach to Form 990 or Form 990-EZ.**
▶ **Information about Schedule C (Form 990 or 990-EZ) and its instructions is at www.irs.gov/form990.**

OMB No 1545-0047

2016

Open to Public Inspection

If the organization answered "Yes" on Form 990, Part IV, Line 3, or Form 990-EZ, Part V, line 46 (Political Campaign Activities), then

- Section 501(c)(3) organizations Complete Parts I-A and B Do not complete Part I-C
- Section 501(c) (other than section 501(c)(3)) organizations Complete Parts I-A and C below Do not complete Part I-B
- Section 527 organizations Complete Part I-A only

If the organization answered "Yes" on Form 990, Part IV, Line 4, or Form 990-EZ, Part VI, line 47 (Lobbying Activities), then

- Section 501(c)(3) organizations that have filed Form 5768 (election under section 501(h)) Complete Part II-A Do not complete Part II-B
- Section 501(c)(3) organizations that have NOT filed Form 5768 (election under section 501(h)) Complete Part II-B Do not complete Part II-A

If the organization answered "Yes" on Form 990, Part IV, Line 5 (Proxy Tax) (see separate instructions) or Form 990-EZ, Part V, line 35c (Proxy Tax) (see separate instructions), then

- Section 501(c)(4), (5), or (6) organizations Complete Part III

Name of the organization VAN ANDEL RESEARCH INSTITUTE	Employer identification number 52-2000823
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Part I-A Complete if the organization is exempt under section 501(c) or is a section 527 organization.

1	Provide a description of the organization's direct and indirect political campaign activities in Part IV	
2	Political expenditures	▶ \$
3	Volunteer hours	

Part I-B Complete if the organization is exempt under section 501(c)(3).

1	Enter the amount of any excise tax incurred by the organization under section 4955	▶ \$
2	Enter the amount of any excise tax incurred by organization managers under section 4955	▶ \$
3	If the organization incurred a section 4955 tax, did it file Form 4720 for this year?	☐ Yes ☐ No
4a	Was a correction made?	☐ Yes ☐ No
b	If "Yes," describe in Part IV	

Part I-C Complete if the organization is exempt under section 501(c), except section 501(c)(3).

1	Enter the amount directly expended by the filing organization for section 527 exempt function activities	▶ \$
2	Enter the amount of the filing organization's funds contributed to other organizations for section 527 exempt function activities	▶ \$
3	Total exempt function expenditures Add lines 1 and 2 Enter here and on Form 1120-POL, line 17b	▶ \$
4	Did the filing organization file Form 1120-POL for this year?	☐ Yes ☐ No
5	Enter the names, addresses and employer identification number (EIN) of all section 527 political organizations to which the filing organization made payments For each organization listed, enter the amount paid from the filing organization's funds Also enter the amount of political contributions received that were promptly and directly delivered to a separate political organization, such as a separate segregated fund or a political action committee (PAC) If additional space is needed, provide information in Part IV	

(a) Name	(b) Address	(c) EIN	(d) Amount paid from filing organization's funds If none, enter -0-	(e) Amount of political contributions received and promptly and directly delivered to a separate political organization If none, enter -0-
2				
3				
4				
5				
6				

Part II-A Complete if the organization is exempt under section 501(c)(3) and filed Form 5768 (election under section 501(h)).**A** Check ☐ if the filing organization belongs to an affiliated group (and list in Part IV each affiliated group member's name, address, EIN, expenses, and share of excess lobbying expenditures)**B** Check ☐ if the filing organization checked box A and "limited control" provisions apply

Limits on Lobbying Expenditures (The term "expenditures" means amounts paid or incurred.)	(a) Filing organization's totals	(b) Affiliated group totals												
1a Total lobbying expenditures to influence public opinion (grass roots lobbying)														
b Total lobbying expenditures to influence a legislative body (direct lobbying)	96,000													
c Total lobbying expenditures (add lines 1a and 1b)	96,000													
d Other exempt purpose expenditures	75,455,666													
e Total exempt purpose expenditures (add lines 1c and 1d)	75,551,666													
f Lobbying nontaxable amount Enter the amount from the following table in both columns	1,000,000													
<table><thead><tr><th>If the amount on line 1e, column (a) or (b) is:</th><th>The lobbying nontaxable amount is:</th></tr></thead><tbody><tr><td>Not over \$500,000</td><td>20% of the amount on line 1e</td></tr><tr><td>Over \$500,000 but not over \$1,000,000</td><td>\$100,000 plus 15% of the excess over \$500,000</td></tr><tr><td>Over \$1,000,000 but not over \$1,500,000</td><td>\$175,000 plus 10% of the excess over \$1,000,000</td></tr><tr><td>Over \$1,500,000 but not over \$17,000,000</td><td>\$225,000 plus 5% of the excess over \$1,500,000</td></tr><tr><td>Over \$17,000,000</td><td>\$1,000,000</td></tr></tbody></table>	If the amount on line 1e, column (a) or (b) is:	The lobbying nontaxable amount is:	Not over \$500,000	20% of the amount on line 1e	Over \$500,000 but not over \$1,000,000	\$100,000 plus 15% of the excess over \$500,000	Over \$1,000,000 but not over \$1,500,000	\$175,000 plus 10% of the excess over \$1,000,000	Over \$1,500,000 but not over \$17,000,000	\$225,000 plus 5% of the excess over \$1,500,000	Over \$17,000,000	\$1,000,000		
If the amount on line 1e, column (a) or (b) is:	The lobbying nontaxable amount is:													
Not over \$500,000	20% of the amount on line 1e													
Over \$500,000 but not over \$1,000,000	\$100,000 plus 15% of the excess over \$500,000													
Over \$1,000,000 but not over \$1,500,000	\$175,000 plus 10% of the excess over \$1,000,000													
Over \$1,500,000 but not over \$17,000,000	\$225,000 plus 5% of the excess over \$1,500,000													
Over \$17,000,000	\$1,000,000													
g Grassroots nontaxable amount (enter 25% of line 1f)	250,000													
h Subtract line 1g from line 1a If zero or less, enter -0-	0													
i Subtract line 1f from line 1c If zero or less, enter -0-	0													
j If there is an amount other than zero on either line 1h or line 1i, did the organization file Form 4720 reporting section 4911 tax for this year?	☐ Yes ☐ No													

4-Year Averaging Period Under section 501(h)
(Some organizations that made a section 501(h) election do not have to complete all of the five columns below. See the separate instructions for lines 2a through 2f.)

Lobbying Expenditures During 4-Year Averaging Period					
Calendar year (or fiscal year beginning in)	(a) 2013	(b) 2014	(c) 2015	(d) 2016	(e) Total
2a Lobbying nontaxable amount	1,000,000	1,000,000	1,000,000	1,000,000	4,000,000
b Lobbying ceiling amount (150% of line 2a, column(e))					6,000,000
c Total lobbying expenditures	367,563	165,579	238,376	96,000	867,518
d Grassroots nontaxable amount	250,000	250,000	250,000	250,000	1,000,000
e Grassroots ceiling amount (150% of line 2d, column (e))					1,500,000
f Grassroots lobbying expenditures					

Part II-B Complete if the organization is exempt under section 501(c)(3) and has NOT filed Form 5768 (election under section 501(h)).

For each "Yes" response on lines 1a through 1i below, provide in Part IV a detailed description of the lobbying activity

		(a)		(b)
		Yes	No	Amount
1	During the year, did the filing organization attempt to influence foreign, national, state or local legislation, including any attempt to influence public opinion on a legislative matter or referendum, through the use of			
a	Volunteers?			
b	Paid staff or management (include compensation in expenses reported on lines 1c through 1i)?			
c	Media advertisements?			
d	Mailings to members, legislators, or the public?			
e	Publications, or published or broadcast statements?			
f	Grants to other organizations for lobbying purposes?			
g	Direct contact with legislators, their staffs, government officials, or a legislative body?			
h	Rallies, demonstrations, seminars, conventions, speeches, lectures, or any similar means?			
i	Other activities?			
j	Total. Add lines 1c through 1i			
2a	Did the activities in line 1 cause the organization to be not described in section 501(c)(3)?			
b	If "Yes," enter the amount of any tax incurred under section 4912			
c	If "Yes," enter the amount of any tax incurred by organization managers under section 4912			
d	If the filing organization incurred a section 4912 tax, did it file Form 4720 for this year?			

Part III-A Complete if the organization is exempt under section 501(c)(4), section 501(c)(5), or section 501(c)(6).

	Yes	No
1 Were substantially all (90% or more) dues received nondeductible by members?	1	
2 Did the organization make only in-house lobbying expenditures of \$2,000 or less?	2	
3 Did the organization agree to carry over lobbying and political expenditures from the prior year?	3	

Part III-B Complete if the organization is exempt under section 501(c)(4), section 501(c)(5), or section 501(c)(6) and if either (a) BOTH Part III-A, lines 1 and 2, are answered "No" OR (b) Part III-A, line 3, is answered "Yes."

1	Dues, assessments and similar amounts from members	1	
2	Section 162(e) nondeductible lobbying and political expenditures (do not include amounts of political expenses for which the section 527(f) tax was paid).		
a	Current year	2a	
b	Carryover from last year	2b	
c	Total	2c	
3	Aggregate amount reported in section 6033(e)(1)(A) notices of nondeductible section 162(e) dues	3	
4	If notices were sent and the amount on line 2c exceeds the amount on line 3, what portion of the excess does the organization agree to carryover to the reasonable estimate of nondeductible lobbying and political expenditure next year?	4	
5	Taxable amount of lobbying and political expenditures (see instructions)	5	

Part IV Supplemental Information

Provide the descriptions required for Part I-A, line 1, Part I-B, line 4, Part I-C, line 5, Part II-A (affiliated group list), Part II-A, lines 1 and 2 (see instructions), and Part II-B, line 1. Also, complete this part for any additional information.

Return Reference	Explanation
------------------	-------------

efile GRAPHIC print - DO NOT PROCESS		As Filed Data -		DLN: 93493295005058	
SCHEDULE D (Form 990) Department of the Treasury Internal Revenue Service		Supplemental Financial Statements ► Complete if the organization answered "Yes," on Form 990, Part IV, line 6, 7, 8, 9, 10, 11a, 11b, 11c, 11d, 11e, 11f, 12a, or 12b. ► Attach to Form 990. Information about Schedule D (Form 990) and its instructions is at www.irs.gov/form990.			OMB No 1545-0047 2016 Open to Public Inspection
Name of the organization VAN ANDEL RESEARCH INSTITUTE				Employer identification number 52-2000823	
Part I Organizations Maintaining Donor Advised Funds or Other Similar Funds or Accounts. Complete if the organization answered "Yes" on Form 990, Part IV, line 6.					
		(a) Donor advised funds		(b) Funds and other accounts	
1	Total number at end of year				
2	Aggregate value of contributions to (during year)				
3	Aggregate value of grants from (during year)				
4	Aggregate value at end of year				
5	Did the organization inform all donors and donor advisors in writing that the assets held in donor advised funds are the organization's property, subject to the organization's exclusive legal control?				☐ Yes ☐ No
6	Did the organization inform all grantees, donors, and donor advisors in writing that grant funds can be used only for charitable purposes and not for the benefit of the donor or donor advisor, or for any other purpose conferring impermissible private benefit?				☐ Yes ☐ No
Part II Conservation Easements. Complete if the organization answered "Yes" on Form 990, Part IV, line 7.					
1	Purpose(s) of conservation easements held by the organization (check all that apply) ☐ Preservation of land for public use (e g , recreation or education) ☐ Preservation of an historically important land area ☐ Protection of natural habitat ☐ Preservation of a certified historic structure ☐ Preservation of open space				
2	Complete lines 2a through 2d if the organization held a qualified conservation contribution in the form of a conservation easement on the last day of the tax year				
a	Total number of conservation easements	Held at the End of the Year			
b	Total acreage restricted by conservation easements	2a			
c	Number of conservation easements on a certified historic structure included in (a)	2b			
d	Number of conservation easements included in (c) acquired after 8/17/06, and not on a historic structure listed in the National Register	2c			
		2d			
3	Number of conservation easements modified, transferred, released, extinguished, or terminated by the organization during the tax year ►				
4	Number of states where property subject to conservation easement is located ►				
5	Does the organization have a written policy regarding the periodic monitoring, inspection, handling of violations, and enforcement of the conservation easements it holds?				☐ Yes ☐ No
6	Staff and volunteer hours devoted to monitoring, inspecting, handling of violations, and enforcing conservation easements during the year ►				
7	Amount of expenses incurred in monitoring, inspecting, handling of violations, and enforcing conservation easements during the year ► \$				
8	Does each conservation easement reported on line 2(d) above satisfy the requirements of section 170(h)(4)(B)(i) and section 170(h)(4)(B)(ii)?				☐ Yes ☐ No
9	In Part XIII, describe how the organization reports conservation easements in its revenue and expense statement, and balance sheet, and include, if applicable, the text of the footnote to the organization's financial statements that describes the organization's accounting for conservation easements				
Part III Organizations Maintaining Collections of Art, Historical Treasures, or Other Similar Assets. Complete if the organization answered "Yes" on Form 990, Part IV, line 8.					
1a	If the organization elected, as permitted under SFAS 116 (ASC 958), not to report in its revenue statement and balance sheet works of art, historical treasures, or other similar assets held for public exhibition, education, or research in furtherance of public service, provide, in Part XIII, the text of the footnote to its financial statements that describes these items				
b	If the organization elected, as permitted under SFAS 116 (ASC 958), to report in its revenue statement and balance sheet works of art, historical treasures, or other similar assets held for public exhibition, education, or research in furtherance of public service, provide the following amounts relating to these items				
(i) Revenue included on Form 990, Part VIII, line 1		► \$			
(ii) Assets included in Form 990, Part X		► \$			
2	If the organization received or held works of art, historical treasures, or other similar assets for financial gain, provide the following amounts required to be reported under SFAS 116 (ASC 958) relating to these items				
a	Revenue included on Form 990, Part VIII, line 1	► \$			
b	Assets included in Form 990, Part X	► \$			
For Paperwork Reduction Act Notice, see the Instructions for Form 990.					
		Cat No 52283D		Schedule D (Form 990) 2016	

Part III

Organizations Maintaining Collections of Art, Historical Treasures, or Other Similar Assets (continued)

3

Using the organization's acquisition, accession, and other records, check any of the following that are a significant use of its collection items (check all that apply)

a

☐ Public exhibition

b

☐ Scholarly research

c

☐ Preservation for future generations

d

☐ Loan or exchange programs

e

☐ Other

4

Provide a description of the organization's collections and explain how they further the organization's exempt purpose in Part XIII

5

During the year, did the organization solicit or receive donations of art, historical treasures or other similar assets to be sold to raise funds rather than to be maintained as part of the organization's collection?

☐ Yes

☐ No

Part IV

Escrow and Custodial Arrangements.
Complete if the organization answered "Yes" on Form 990, Part IV, line 9, or reported an amount on Form 990, Part X, line 21.

1a

Is the organization an agent, trustee, custodian or other intermediary for contributions or other assets not included on Form 990, Part X?

☐ Yes

☐ No

b

If "Yes," explain the arrangement in Part XIII and complete the following table

c

Beginning balance

d

Additions during the year

e

Distributions during the year

f

Ending balance

	Amount
1c	
1d	
1e	
1f	

2a

Did the organization include an amount on Form 990, Part X, line 21, for escrow or custodial account liability?

☐ Yes

☐ No

b

If "Yes," explain the arrangement in Part XIII. Check here if the explanation has been provided in Part XIII

☐

Part V

Endowment Funds. Complete if the organization answered "Yes" on Form 990, Part IV, line 10.

	(a)Current year	(b)Prior year	(c)Two years back	(d)Three years back	(e)Four years back
1a Beginning of year balance	612,777				
b Contributions		596,343			
c Net investment earnings, gains, and losses	61,326	18,408			
d Grants or scholarships					
e Other expenditures for facilities and programs	7,801	1,974			
f Administrative expenses					
g End of year balance	666,302	612,777			

2

Provide the estimated percentage of the current year end balance (line 1g, column (a)) held as

a

Board designated or quasi-endowment

b

Permanent endowment 100.000 %

c

Temporarily restricted endowment

The percentages on lines 2a, 2b, and 2c should equal 100%

3a

Are there endowment funds not in the possession of the organization that are held and administered for the organization by

(i) unrelated organizations

3a(i)

Yes

No

(ii) related organizations

3a(ii)

Yes

b

If "Yes" on 3a(ii), are the related organizations listed as required on Schedule R?

3b

Yes

4

Describe in Part XIII the intended uses of the organization's endowment funds

Part VI

Land, Buildings, and Equipment.
Complete if the organization answered 'Yes' on Form 990, Part IV, line 11a. See Form 990, Part X, line 10.

Description of property	(a) Cost or other basis (investment)	(b) Cost or other basis (other)	(c) Accumulated depreciation	(d) Book value
1a Land		5,288,315		5,288,315
b Buildings		225,077,206	60,932,537	164,144,669
c Leasehold improvements				
d Equipment		52,799,146	38,676,310	14,122,836
e Other		1,366,056	35,417	1,330,639
Total. Add lines 1a through 1e (Column (d) must equal Form 990, Part X, column (B), line 10(c))				184,886,459

Part VII

Investments—Other Securities. Complete if the organization answered 'Yes' on Form 990, Part IV, line 11b.
See Form 990, Part X, line 12.

(a) Description of security or category (including name of security)	(b) Book value	(c) Method of valuation Cost or end-of-year market value
(1) Financial derivatives		
(2) Closely-held equity interests		
(3) Other _____		
(A)		
(B)		
(C)		
(D)		
(E)		
(F)		
(G)		
(H)		
Total. (Column (b) must equal Form 990, Part X, col (B) line 12.) ▶		

Part VIII

Investments—Program Related. Complete if the organization answered 'Yes' on Form 990, Part IV, line 11c.
See Form 990, Part X, line 13.

(a) Description of investment	(b) Book value	(c) Method of valuation Cost or end-of-year market value
(1)		
(2)		
(3)		
(4)		
(5)		
(6)		
(7)		
(8)		
(9)		
Total. (Column (b) must equal Form 990, Part X, col (B) line 13.) ▶		

Part IX

Other Assets. Complete if the organization answered 'Yes' on Form 990, Part IV, line 11d See Form 990, Part X, line 15

(a) Description	(b) Book value
(1) PLEDGED SECURITIES	37,840,000
(1)	
(2)	
(3)	
(4)	
(5)	
(6)	
(7)	
(8)	
(9)	
Total. (Column (b) must equal Form 990, Part X, col (B) line 15.) ▶	37,840,000

Part X

Other Liabilities. Complete if the organization answered 'Yes' on Form 990, Part IV, line 11e or 11f.
See Form 990, Part X, line 25.

1. (a) Description of liability	(b) Book value
(1) Federal income taxes	
ACCRUED POSTRETIREMENT BENEFIT OBLIGATION	33,384
UNREALIZED LOSS ON INTEREST RATE SWAP	52,883,023
RELATED-PARTY PAYABLE	5,975,806
(4)	
(5)	
(6)	
(7)	
(8)	
(9)	
Total. (Column (b) must equal Form 990, Part X, col (B) line 25.) ▶	58,892,213

2. Liability for uncertain tax positions In Part XIII, provide the text of the footnote to the organization's financial statements that reports the organization's liability for uncertain tax positions under FIN 48 (ASC 740) Check here if the text of the footnote has been provided in Part XIII

☒

Part XI Reconciliation of Revenue per Audited Financial Statements With Revenue per Return

Complete if the organization answered 'Yes' on Form 990, Part IV, line 12a.

1	Total revenue, gains, and other support per audited financial statements	1	77,687,226
2	Amounts included on line 1 but not on Form 990, Part VIII, line 12		
a	Net unrealized gains (losses) on investments	2a	77,276
b	Donated services and use of facilities	2b	
c	Recoveries of prior year grants	2c	
d	Other (Describe in Part XIII)	2d	1,544,162
e	Add lines 2a through 2d	2e	1,621,438
3	Subtract line 2e from line 1	3	76,065,788
4	Amounts included on Form 990, Part VIII, line 12, but not on line 1 :		
a	Investment expenses not included on Form 990, Part VIII, line 7b	4a	
b	Other (Describe in Part XIII)	4b	7,001,053
c	Add lines 4a and 4b	4c	7,001,053
5	Total revenue. Add lines 3 and 4c . (This must equal Form 990, Part I, line 12)	5	83,066,841

Part XII Reconciliation of Expenses per Audited Financial Statements With Expenses per Return.

Complete if the organization answered 'Yes' on Form 990, Part IV, line 12a.

1	Total expenses and losses per audited financial statements	1	62,759,423
2	Amounts included on line 1 but not on Form 990, Part IX, line 25		
a	Donated services and use of facilities	2a	
b	Prior year adjustments	2b	
c	Other losses	2c	
d	Other (Describe in Part XIII)	2d	-5,791,190
e	Add lines 2a through 2d	2e	-5,791,190
3	Subtract line 2e from line 1	3	68,550,613
4	Amounts included on Form 990, Part IX, line 25, but not on line 1 :		
a	Investment expenses not included on Form 990, Part VIII, line 7b	4a	
b	Other (Describe in Part XIII)	4b	7,001,053
c	Add lines 4a and 4b	4c	7,001,053
5	Total expenses. Add lines 3 and 4c . (This must equal Form 990, Part I, line 18)	5	75,551,666

Part XIII Supplemental Information

Provide the descriptions required for Part II, lines 3, 5, and 9, Part III, lines 1a and 4, Part IV, lines 1b and 2b, Part V, line 4, Part X, line 2, Part XI, lines 2d and 4b, and Part XII, lines 2d and 4b. Also complete this part to provide any additional information.

Return Reference	Explanation
See Additional Data Table	

Part XIII Supplemental Information *(continued)*

Return Reference	Explanation

Additional Data

Software ID:
Software Version:
EIN: 52-2000823
Name: VAN ANDEL RESEARCH INSTITUTE

Supplemental Information

Return Reference	Explanation
PART X, LINE 2	PART X, LINE 1(1) AND LINE 2 THERE ARE NO UNCERTAIN TAX POSITIONS RELATED TO VARI

Supplemental Information	
Return Reference	Explanation
PART XI, LINE 2D - OTHER ADJUSTMENTS	RENTAL EXPENSES 1,525,162 FUNDRAISING EVENT EXPENSE 19,000

Supplemental Information	
Return Reference	Explanation
PART XI, LINE 4B - OTHER ADJUSTMENTS	NET ALLOCATED 7,001,053

Supplemental Information	
Return Reference	Explanation
PART XII, LINE 2D - OTHER ADJUSTMENTS	RENTAL EXPENSES 1,525,162 FUNDRAISING EVENT EXPENSE 19,000 GAIN ON INTEREST RATE SWAP -7,335,352

Supplemental Information	
Return Reference	Explanation
PART XII, LINE 4B - OTHER ADJUSTMENTS	NET ALLOCATED 7,001,053

Supplemental Information	
Return Reference	Explanation
PART V	VAN ANDEL INSTITUTE (A RELATED ORGANIZATION) MAINTAINS ENDOWED FUNDS FOR THE BENEFIT OF BOTH VARI AND VAN ANDEL EDUCATION INSTITUTE (A RELATED ORGANIZATION) TO FUND OPERATING EXPENSES

Supplemental Information	
Return Reference	Explanation
PART XI AND XII, LINE 4B	EXPENSE ALLOCATIONS PRESENTED WITHIN REVENUE

**SCHEDULE F
(Form 990)**

Department of the Treasury
Internal Revenue Service

Name of the organization
VAN ANDEL RESEARCH INSTITUTE

Statement of Activities Outside the United States

► Complete if the organization answered "Yes" to Form 990,
Part IV, line 14b, 15, or 16.

► Attach to Form 990. ► See separate instructions.

► Information about Schedule F (Form 990) and its instructions is at www.irs.gov/form990.

OMB No 1545-0047

2016

**Open to Public
Inspection**

Employer identification number

52-2000823

Part I **General Information on Activities Outside the United States.** Complete if the organization answered "Yes" to Form 990, Part IV, line 14b.

1 For grantmakers. Does the organization maintain records to substantiate the amount of its grants and other assistance, the grantees' eligibility for the grants or assistance, and the selection criteria used to award the grants or assistance? ☒ **Yes** ☐ **No**

2 For grantmakers. Describe in Part V the organization's procedures for monitoring the use of its grants and other assistance outside the United States

3 Activities per Region (The following Part I, line 3 table can be duplicated if additional space is needed)

(a) Region	(b) Number of offices in the region	(c) Number of employees, agents, and independent contractors in region	(d) Activities conducted in region (by type) (e g , fundraising, program services, investments, grants to recipients located in the region)	(e) If activity listed in (d) is a program service, describe specific type of service(s) in region	(f) Total expenditures for and investments in region
See Add'l Data					
3a Sub-total	0	1			740,002
b Total from continuation sheets to Part I	0	0			0
c Totals (add lines 3a and 3b)	0	1			740,002

Part II **Grants and Other Assistance to Organizations or Entities Outside the United States.** Complete if the organization answered "Yes" to Form 990, Part IV, line 15, for any recipient who received more than \$5,000. Part II can be duplicated if additional space is needed.

1	(a) Name of organization	(b) IRS code section and EIN (if applicable)	(c) Region	(d) Purpose of grant	(e) Amount of cash grant	(f) Manner of cash disbursement	(g) Amount of non-cash assistance	(h) Description of non-cash assistance	(i) Method of valuation (book, FMV, appraisal, other)
			EUROPE	RESEARCH COLLABORATION	144,536	WIRE TRANSFER			

- 2 Enter total number of recipient organizations listed above that are recognized as charities by the foreign country, recognized as tax-exempt by the IRS, or for which the grantee or counsel has provided a section 501(c)(3) equivalency letter **1**
- 3 Enter total number of other organizations or entities **1**

Part III	Grants and Other Assistance to Individuals Outside the United States. Complete if the organization answered "Yes" to Form 990, Part IV, line 16.
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Part III can be duplicated if additional space is needed.

[illegible]

Part IV Foreign Forms

- 1 Was the organization a U S transferor of property to a foreign corporation during the tax year? *If "Yes," the organization may be required to file Form 926, Return by a U S Transferor of Property to a Foreign Corporation (see Instructions for Form 926)* ☐ Yes ☒ No
- 2 Did the organization have an interest in a foreign trust during the tax year? *If "Yes," the organization may be required to separately file Form 3520, Annual Return to Report Transactions with Foreign Trusts and Receipt of Certain Foreign Gifts, and/or Form 3520-A, Annual Information Return of Foreign Trust With a U S Owner (see Instructions for Forms 3520 and 3520-A)* ☐ Yes ☒ No
- 3 Did the organization have an ownership interest in a foreign corporation during the tax year? *If "Yes," the organization may be required to file Form 5471, Information Return of U S Persons with Respect to Certain Foreign Corporations (see Instructions for Form 5471)* ☐ Yes ☒ No
- 4 Was the organization a direct or indirect shareholder of a passive foreign investment company or a qualified electing fund during the tax year? *If "Yes," the organization may be required to file Form 8621, Information Return by a Shareholder of a Passive Foreign Investment Company or Qualified Electing Fund (see Instructions for Form 8621)* ☐ Yes ☒ No
- 5 Did the organization have an ownership interest in a foreign partnership during the tax year? *If "Yes," the organization may be required to file Form 8865, Return of U S Persons with Respect to Certain Foreign Partnerships (see Instructions for Form 8865)* ☐ Yes ☒ No
- 6 Did the organization have any operations in or related to any boycotting countries during the tax year? *If "Yes," the organization may be required to separately file Form 5713, International Boycott Report (see Instructions for Form 5713)* ☐ Yes ☒ No

Part V Supplemental Information

Provide the information required by Part I, line 2 (monitoring of funds); Part I, line 3, column (f) (accounting method; amounts of investments vs. expenditures per region); Part II, line 1 (accounting method); Part III (accounting method); and Part III, column (c) (estimated number of recipients), as applicable. Also complete this part to provide any additional information (see instructions).

Return Reference	Explanation
PART I, LINE 2	GRANT FUNDS ARE MONITORED BY QUARTERLY EXPENDITURE REPORTS BEFORE DISBURSING INCREMENTAL FUNDING PROGRESS REPORTS ARE REQUIRED ANNUALLY AND REVIEWED BY VAN ANDEL RESEARCH INSTITUTE AND A THIRD PARTY

Return Reference	Explanation
SCHEDULE F, PART II, LINE 1	ORGANIZATION PROVIDED ASSISTANCE IS MONITORED WITH QUARTERLY EXPENDITURE REPORTING

Additional Data

Software ID:

Software Version:

EIN: 52-2000823

Name: VAN ANDEL RESEARCH INSTITUTE

Form 990 Schedule F Part I - Activities Outside The United States

(a) Region	(b) Number of offices in the region	(c) Number of employees or agents in region	(d) Activities conducted in region (by type) (i.e., fundraising, program services, grants to recipients located in the region)	(e) If activity listed in (d) is a program service, describe specific type of service(s) in region	(f) Total expenditures for region
EAST ASIA & THE PACIFIC	0	1	PROGRAM SERVICES	RESEARCH COLLABORATION - RESEARCH SERVICES	174,172
EUROPE	0	0	PROGRAM SERVICES	RESEARCH COLLABORATION - RESEARCH SERVICES	565,830

Complete if the organization answered "Yes" on Form 990, Part IV, lines 17, 18, or 19, or if the organization entered more than \$15,000 on Form 990-EZ, line 6a
▶ Attach to Form 990 or Form 990-EZ.

► Information about Schedule G (Form 990 or 990-EZ) and its instructions is at www.irs.gov/form990.

Employer identification number

52-2000823

1 Indicate whether the organization raised funds through any of the following activities. Check all that apply.

- 2a** Did the organization have a written or oral agreement with any individual (including officers, directors, trustees or key employees listed in Form 990, Part VII) or entity in connection with professional fundraising services? ☐ Yes ☐ No
- b** If "Yes," list the ten highest paid individuals or entities (fundraisers) pursuant to agreements under which the fundraiser is to be compensated at least \$5,000 by the organization

(i) Name and address of individual or entity (fundraiser)	(ii) Activity	(iii) Did fundraiser have custody or control of contributions?		(iv) Gross receipts from activity	(v) Amount paid to (or retained by) fundraiser listed in col (i)	(vi) Amount paid to (or retained by) organization
		Yes	No			
Total						

- 3** List all states in which the organization is registered or licensed to solicit contributions or has been notified it is exempt from registration or licensing

Part II Fundraising Events. Complete if the organization answered "Yes" on Form 990, Part IV, line 18, or reported more than \$15,000 of fundraising event contributions and gross income on Form 990-EZ, lines 1 and 6b. List events with gross receipts greater than \$5,000.

Revenue		(a) Event #1	(b) Event #2	(c) Other events	(d)
		5K RACE (event type)	GRIFFINS (event type)	(total number)	Total events (add col (a) through col (c))
1	Gross receipts	40,270	31,339		71,609
2	Less Contributions	31,885	31,339		63,224
3	Gross income (line 1 minus line 2)	8,385			8,385
Direct Expenses	4 Cash prizes				
	5 Noncash prizes				
	6 Rent/facility costs				
	7 Food and beverages				
	8 Entertainment				
	9 Other direct expenses	5,848	13,152		19,000
	10 Direct expense summary Add lines 4 through 9 in column (d) ▶				19,000
11	Net income summary Subtract line 10 from line 3, column (d) ▶				-10,615

Part III Gaming. Complete if the organization answered "Yes" on Form 990, Part IV, line 19, or reported more than \$15,000 on Form 990-EZ, line 6a.

Revenue		(a) Bingo	(b) Pull tabs/Instant bingo/progressive bingo	(c) Other gaming	(d) Total gaming (add col (a) through col (c))
1	Gross revenue				
Direct Expenses	2 Cash prizes				
	3 Noncash prizes				
	4 Rent/facility costs				
	5 Other direct expenses				
	6 Volunteer labor	☐ Yes _____ % ☐ No	☐ Yes _____ % ☐ No	☐ Yes _____ % ☐ No	
	7 Direct expense summary Add lines 2 through 5 in column (d) ▶				
	8 Net gaming income summary Subtract line 7 from line 1, column (d) ▶				

9 Enter the state(s) in which the organization conducts gaming activities _____

a Is the organization licensed to conduct gaming activities in each of these states?

☐ Yes ☐ No

b If "No," explain _____

10a Were any of the organization's gaming licenses revoked, suspended or terminated during the tax year?

☐ Yes ☐ No

b If "Yes," explain _____

- 11** Does the organization conduct gaming activities with nonmembers? ☐ Yes ☐ No
- 12** Is the organization a grantor, beneficiary or trustee of a trust or a member of a partnership or other entity formed to administer charitable gaming? ☐ Yes ☐ No
- 13** Indicate the percentage of gaming activity conducted in
- | | | |
|--------------------------------------|------------|---|
| a The organization's facility | 13a | % |
| b An outside facility | 13b | % |
- 14** Enter the name and address of the person who prepares the organization's gaming/special events books and records

Name ►

Address ►

- 15a** Does the organization have a contract with a third party from whom the organization receives gaming revenue? ☐ Yes ☐ No

- b** If "Yes," enter the amount of gaming revenue received by the organization ► \$ _____ and the amount of gaming revenue retained by the third party ► \$ _____

- c** If "Yes," enter name and address of the third party

Name ►

Address ►

16 Gaming manager information

Name ►

Gaming manager compensation ► \$

Description of services provided ►

☐ Director/officer ☐ Employee ☐ Independent contractor

17 Mandatory distributions

- a** Is the organization required under state law to make charitable distributions from the gaming proceeds to retain the state gaming license? ☐ Yes ☐ No
- b** Enter the amount of distributions required under state law distributed to other exempt organizations or spent in the organization's own exempt activities during the tax year ► \$ _____

Part IV **Supplemental Information.** Provide the explanations required by Part I, line 2b, columns (iii) and (v); and Part III, lines 9, 9b, 10b, 15b, 15c, 16, and 17b, as applicable. Also complete this part to provide any additional information (see instructions).

Return Reference

Explanation

efile GRAPHIC print - DO NOT PROCESS		As Filed Data -		DLN: 93493295005058		
Schedule I (Form 990)	Grants and Other Assistance to Organizations, Governments and Individuals in the United States Complete if the organization answered "Yes," on Form 990, Part IV, line 21 or 22. ▶ Attach to Form 990. ▶ Information about Schedule I (Form 990) and its instructions is at www.irs.gov/form990.				OMB No 1545-0047	
					2016	
					Open to Public Inspection	
Department of the Treasury Internal Revenue Service						
Name of the organization VAN ANDEL RESEARCH INSTITUTE				Employer identification number 52-2000823		

Part I	General Information on Grants and Assistance
--------	--

- 1

Does the organization maintain records to substantiate the amount of the grants or assistance, the grantees' eligibility for the grants or assistance, and the selection criteria used to award the grants or assistance?

☒ Yes ☐ No
- 2

Describe in Part IV the organization's procedures for monitoring the use of grant funds in the United States

Part II	Grants and Other Assistance to Domestic Organizations and Domestic Governments. Complete if the organization answered "Yes" on Form 990, Part IV, line 21, for any recipient that received more than \$5,000. Part II can be duplicated if additional space is needed.
---------	--

(a) Name and address of organization or government	(b) EIN	(c) IRC section if applicable	(d) Amount of cash grant	(e) Amount of non-cash assistance	(f) Method of valuation (book, FMV, appraisal, other)	(g) Description of non-cash assistance	(h) Purpose of grant or assistance
2 Enter total number of section 501(c)(3) and government organizations listed in the line 1 table 6							
3 Enter total number of other organizations listed in the line 1 table 0							

Part III **Grants and Other Assistance to Domestic Individuals.** Complete if the organization answered "Yes" on Form 990, Part IV, line 22
Part III can be duplicated if additional space is needed

(a) Type of grant or assistance	(b) Number of recipients	(c) Amount of cash grant	(d) Amount of non-cash assistance	(e) Method of valuation (book, FMV, appraisal, other)	(f) Description of non-cash assistance
(1) GRADUATE STUDENT STIPENDS FOR MICHIGAN STATE UNIVERSITY STUDENTS	3	116,586			
(2) GRADUATE STUDENT STIPENDS VAN ANDEL INSTITUTE GRADUATE SCHOOL	2	50,668			
(3) FOREIGN NATIONAL STIPENDS	6	63,366			
(4) GUEST STUDENT STIPENDS	2	27,851			
(4)					
(5)					
(6)					
(7)					

Part IV **Supplemental Information.** Provide the information required in Part I, line 2, Part III, column (b), and any other additional information.

Return Reference	Explanation
PART I, LINE 2	STUDENTS RECEIVE A STIPEND FOR LIVING EXPENSE AND INSURANCE GRANT FUNDS TO INSTITUTIONS ARE MONITORED BY QUARTERLY EXPENDITURE REPORTS BEFORE DISBURSING INCREMENTAL FUNDING PROGRESS REPORTS ARE REQUIRED ANNUALLY AND REVIEWED BY VAN ANDEL RESEARCH INSTITUTE AND A THIRD PARTY

Additional Data

Software ID:
Software Version:
EIN: 52-2000823
Name: VAN ANDEL RESEARCH INSTITUTE

Form 990, Schedule I, Part II, Grants and Other Assistance to Domestic Organizations and Domestic Governments.

(a) Name and address of organization or government	(b) EIN	(c) IRC section if applicable	(d) Amount of cash grant	(e) Amount of non-cash assistance	(f) Method of valuation (book, FMV, appraisal, other)	(g) Description of non-cash assistance	(h) Purpose of grant or assistance
JOHNS HOPKINS UNIVERSITY 3400 N CHARLES STREET BALTIMORE, MD 21218	52-0595110	501C3	146,253				RESEARCH COLLABORATION
UNIVERSITY OF SOUTHERN CALIFORNIA 1450 BIGGY STREET LOS ANGELES, CA 90089	95-1642394	501C3	48,684				RESEARCH COLLABORATION

Form 990, Schedule I, Part II, Grants and Other Assistance to Domestic Organizations and Domestic Governments.							
(a) Name and address of organization or government	(b) EIN	(c) IRC section if applicable	(d) Amount of cash grant	(e) Amount of non-cash assistance	(f) Method of valuation (book, FMV, appraisal, other)	(g) Description of non-cash assistance	(h) Purpose of grant or assistance
MEMORIAL SLOAN-KETTERING CANCER CENTER 1275 YORK AVENUE NEW YORK, NY 10065	13-1924236	501C3	150,000				RESEARCH COLLABORATION
INSTITUTE FOR CANCER RESEARCH 333 COTTMAN AVE INSTITUTIONAL ADVANCEMENT PHILADELPHIA, PA 19111	23-2003072	501C3	97,467				RESEARCH COLLABORATION

Form 990, Schedule I, Part II, Grants and Other Assistance to Domestic Organizations and Domestic Governments.							
(a) Name and address of organization or government	(b) EIN	(c) IRC section if applicable	(d) Amount of cash grant	(e) Amount of non-cash assistance	(f) Method of valuation (book, FMV, appraisal, other)	(g) Description of non-cash assistance	(h) Purpose of grant or assistance
MICHIGAN STATE UNIVERSITY 220 TROWBRIDGE RD EAST LANSING, MI 48824	38-6005984	501C3	155,875				RESEARCH COLLABORATION
FRIENDS OF CRESCENT PARK 301 BOSTWICK NE GRAND RAPIDS, MI 49503	26-4562012	501C3	9,000				SUPPORT CRESCENT PARK MAINTENANCE

Schedule J
(Form 990)

Department of the Treasury
Internal Revenue Service

Compensation Information

For certain Officers, Directors, Trustees, Key Employees, and Highest Compensated Employees

▶ Complete if the organization answered "Yes" on Form 990, Part IV, line 23.
▶ Attach to Form 990.

▶ Information about Schedule J (Form 990) and its instructions is at www.irs.gov/form990.

OMB No 1545-0047

2015

Open to Public Inspection

Name of the organization VAN ANDEL RESEARCH INSTITUTE	Employer identification number 52-2000823
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Part I

Questions Regarding Compensation

	Yes	No
1a Check the appropriate box(es) if the organization provided any of the following to or for a person listed on Form 990, Part VII, Section A, line 1a. Complete Part III to provide any relevant information regarding these items. ☐ First-class or charter travel ☐ Travel for companions ☐ Tax idemnification and gross-up payments ☐ Discretionary spending account ☐ Housing allowance or residence for personal use ☐ Payments for business use of personal residence ☐ Health or social club dues or initiation fees ☐ Personal services (e g , maid, chauffeur, chef)		
b If any of the boxes in line 1a are checked, did the organization follow a written policy regarding payment or reimbursement or provision of all of the expenses described above? If "No," complete Part III to explain.	Yes	
2 Did the organization require substantiation prior to reimbursing or allowing expenses incurred by all directors, trustees, officers, including the CEO/Executive Director, regarding the items checked in line 1a?	Yes	
3 Indicate which, if any, of the following the filing organization used to establish the compensation of the organization's CEO/Executive Director. Check all that apply. Do not check any boxes for methods used by a related organization to establish compensation of the CEO/Executive Director, but explain in Part III. ☐ Compensation committee ☐ Independent compensation consultant ☐ Form 990 of other organizations ☐ Written employment contract ☐ Compensation survey or study ☐ Approval by the board or compensation committee		
4 During the year, did any person listed on Form 990, Part VII, Section A, line 1a with respect to the filing organization or a related organization: a Receive a severance payment or change-of-control payment? b Participate in, or receive payment from, a supplemental nonqualified retirement plan? c Participate in, or receive payment from, an equity-based compensation arrangement? If "Yes" to any of lines 4a-c, list the persons and provide the applicable amounts for each item in Part III.	Yes	
Only 501(c)(3), 501(c)(4), and 501(c)(29) organizations must complete lines 5-9.		
5 For persons listed on Form 990, Part VII, Section A, line 1a, did the organization pay or accrue any compensation contingent on the revenues of: a The organization? b Any related organization? If "Yes," on line 5a or 5b, describe in Part III.	Yes	
6 For persons listed on Form 990, Part VII, Section A, line 1a, did the organization pay or accrue any compensation contingent on the net earnings of: a The organization? b Any related organization? If "Yes," on line 6a or 6b, describe in Part III.		No
7 For persons listed on Form 990, Part VII, Section A, line 1a, did the organization provide any non-fixed payments not described in lines 5 and 6? If "Yes," describe in Part III.		No
8 Were any amounts reported on Form 990, Part VII, paid or accrued pursuant to a contract that was subject to the initial contract exception described in Regulations section 53.4958-4(a)(3)? If "Yes," describe in Part III.		No
9 If "Yes" on line 8, did the organization also follow the rebuttable presumption procedure described in Regulations section 53.4958-6(c)?		

Part II Officers, Directors, Trustees, Key Employees, and Highest Compensated Employees. Use duplicate copies if additional space is needed.

For each individual whose compensation must be reported on Schedule J, report compensation from the organization on row (i) and from related organizations, described in the instructions, on row (ii). Do not list any individuals that are not listed on Form 990, Part VII.

Note. The sum of columns (B)(i)-(iii) for each listed individual must equal the total amount of Form 990, Part VII, Section A, line 1a, applicable column (D) and (E) amounts for that individual.

(A) Name and Title	(B) Breakdown of W-2 and/or 1099-MISC compensation			(C) Retirement and other deferred compensation	(D) Nontaxable benefits	(E) Total of columns (B)(i)-(D)	(F) Compensation in column(B) reported as deferred on prior Form 990
	(i) Base compensation	(ii) Bonus & incentive compensation	(iii) Other reportable compensation				
See Additional Data Table							

Part III **Supplemental Information**

Provide the information, explanation, or descriptions required for Part I, lines 1a, 1b, 3, 4a, 4b, 4c, 5a, 5b, 6a, 6b, 7, and 8, and for Part II. Also complete this part for any additional information.

Return Reference	Explanation
PART I, LINE 1A	VARI ALLOWS FOR FIRST-CLASS OR CHARTER TRAVEL FOR OFFICERS AND TRUSTEES
PART I, LINE 4A	INCLUDES SEVERANCE PAYMENTS TO DAVID WHITESCARVER OF \$46,698 FROM VAN ANDEL INSTITUTE FOR CALENDER YEAR 2016
PART I, LINE 5	BONUS IS PAID BASED ON GRANT REVENUE EARNED FOR ELIGIBLE PROGRAM PARTICIPANTS

Additional Data

Software ID:
Software Version:
EIN: 52-2000823
Name: VAN ANDEL RESEARCH INSTITUTE

Form 990, Schedule J, Part II - Officers, Directors, Trustees, Key Employees, and Highest Compensated Employees

(A) Name and Title		(B) Breakdown of W-2 and/or 1099-MISC compensation			(C) Retirement and other deferred compensation	(D) Nontaxable benefits	(E) Total of columns (B)(i)-(D)	(F) Compensation in column (B) reported as deferred on prior Form 990
		(i) Base Compensation	(ii) Bonus & incentive compensation	(iii) Other reportable compensation				
1DAVID VAN ANDEL CHAIRMAN / CEO	(i)	334,231	88,200	19,689	128,500	904	571,524	88,200
	(ii)	0	0	0	0	- 0	- 0	0
1DR GEORGE VANDE WOUDE TRUSTEE/INVESTIGATOR (ENDED 9/30/17)	(i)	282,706	0	19,780	26,500	1,828	330,814	0
	(ii)	0	0	0	0	- 0	- 0	0
2DR JANA HALL CHIEF OPERATIONS OFFICER	(i)	334,482	56,511	3,564	108,000	10,663	513,220	56,511
	(ii)	0	0	0	0	- 0	- 0	0
3TIMOTHY MYERS V P & CHIEF FINANCIAL OFFICER	(i)	250,302	47,502	805	75,020	10,663	384,292	47,502
	(ii)	0	0	0	0	- 0	- 0	0
4DR PETER JONES CHIEF SCIENTIFIC OFFICER & RES DIR	(i)	548,834	130,200	24,858	176,960	10,663	891,515	130,200
	(ii)	0	0	0	0	- 0	- 0	0
5KATHY VOGELSANG CHIEF INVESTMENT OFFICER	(i)	276,056	135,000	20,322	275,300	10,663	717,341	135,000
	(ii)	0	0	0	0	- 0	- 0	0
6DR PATRIK BRUNDIN ASSOCIATE RESEARCH DIRECTOR	(i)	424,339	49,575	2,322	90,812	10,663	577,711	49,575
	(ii)	0	0	0	0	- 0	- 0	0
7DR GERALD CALLAHAN V P , INNOVATIONS & COLLABORATIONS	(i)	260,026	76,719	13,210	93,020	10,663	453,638	76,719
	(ii)	0	0	0	0	- 0	- 0	0
8DR PETER LAIRD INVESTIGATOR	(i)	368,114	23,486	2,322	49,748	10,663	454,333	0
	(ii)	0	0	0	0	- 0	- 0	0
9DR GERD PFEIFER INVESTIGATOR	(i)	339,168	5,234	3,564	37,132	10,663	395,761	0
	(ii)	0	0	0	0	- 0	- 0	0
10DAVID WHITESCARVER FORMER SECRETARY/V P (ENDED 8/31/16)	(i)	242,497	65,033	60,016	54,685	7,109	429,340	61,531
	(ii)	0	0	0	0	- 0	- 0	0

Schedule K
(Form 990)

Supplemental Information on Tax Exempt Bonds

OMB No 1545-0047

2016

Open to Public Inspection

Department of the Treasury
Internal Revenue Service

► Complete if the organization answered "Yes" to Form 990, Part IV, line 24a. Provide descriptions, explanations, and any additional information in Part VI.
► Attach to Form 990.
► Information about Schedule K (Form 990) and its instructions is at www.irs.gov/form990.

Name of the organization
VAN ANDEL RESEARCH INSTITUTE

Employer identification number
52-2000823

Part I Bond Issues											
(a) Issuer name	(b) Issuer EIN	(c) CUSIP #	(d) Date issued	(e) Issue price	(f) Description of purpose	(g) Defeased		(h) On behalf of issuer		(i) Pool financing	
						Yes	No	Yes	No	Yes	No
A MICHIGAN STRATEGIC FUND	52-1417332	000000000	04-01-2013	220,000,000	REFUND BOND ISSUE 4/10/08		X		X		X

Part II		Proceeds							
		A		B		C		D	
1	Amount of bonds retired								
2	Amount of bonds legally defeased								
3	Total proceeds of issue	220,000,000							
4	Gross proceeds in reserve funds								
5	Capitalized interest from proceeds								
6	Proceeds in refunding escrows								
7	Issuance costs from proceeds								
8	Credit enhancement from proceeds								
9	Working capital expenditures from proceeds								
10	Capital expenditures from proceeds								
11	Other spent proceeds	220,000,000							
12	Other unspent proceeds								
13	Year of substantial completion								
		Yes	No	Yes	No	Yes	No	Yes	No
14	Were the bonds issued as part of a current refunding issue?	X							
15	Were the bonds issued as part of an advance refunding issue?		X						
16	Has the final allocation of proceeds been made?	X							
17	Does the organization maintain adequate books and records to support the final allocation of proceeds?	X							

Part III Private Business Use									
		A		B		C		D	
		Yes	No	Yes	No	Yes	No	Yes	No
1	Was the organization a partner in a partnership, or a member of an LLC, which owned property financed by tax-exempt bonds?		X						
2	Are there any lease arrangements that may result in private business use of bond-financed property?		X						

Part III Private Business Use (Continued)

	A		B		C		D	
	Yes	No	Yes	No	Yes	No	Yes	No
3a Are there any management or service contracts that may result in private business use of bond-financed property?	X							
b If "Yes" to line 3a, does the organization routinely engage bond counsel or other outside counsel to review any management or service contracts relating to the financed property?	X							
c Are there any research agreements that may result in private business use of bond-financed property?	X							
d If "Yes" to line 3c, does the organization routinely engage bond counsel or other outside counsel to review any research agreements relating to the financed property?	X							
4 Enter the percentage of financed property used in a private business use by entities other than a section 501(c)(3) organization or a state or local government								
5 Enter the percentage of financed property used in a private business use as a result of unrelated trade or business activity carried on by your organization, another section 501(c)(3) organization, or a state or local government	0 450 %							
6 Total of lines 4 and 5	0 450 %							
7 Does the bond issue meet the private security or payment test? . . .		X						
8a Has there been a sale or disposition of any of the bond-financed property to a nongovernmental person other than a 501(c)(3) organization since the bonds were issued?		X						
b If "Yes" to line 8a, enter the percentage of bond-financed property sold or disposed of . .								
c If "Yes" to line 8a, was any remedial action taken pursuant to Regulations sections 1.141-12 and 1.145-2?								
9 Has the organization established written procedures to ensure that all nonqualified bonds of the issue are remediated in accordance with the requirements under Regulations sections 1.141-12 and 1.145-2?	X							

Part IV Arbitrage

	A		B		C		D	
	Yes	No	Yes	No	Yes	No	Yes	No
1 Has the issuer filed Form 8038-T, Arbitrage Rebate, Yield Reduction and Penalty in Lieu of Arbitrage Rebate? . . .		X						
2 If "No" to line 1, did the following apply?								
a Rebate not due yet?		X						
b Exception to rebate?		X						
c No rebate due?	X							
If "Yes" to line 2c, provide in Part VI the date the rebate computation was performed								
3 Is the bond issue a variable rate issue?	X							
4a Has the organization or the governmental issuer entered into a qualified hedge with respect to the bond issue?		X						
b Name of provider								
c Term of hedge								
d Was the hedge superintegrated?								
e Was the hedge terminated?								

Part IV Arbitrage (Continued)

	A		B		C		D	
	Yes	No	Yes	No	Yes	No	Yes	No
5a Were gross proceeds invested in a guaranteed investment contract (GIC)?		X						
b Name of provider								
c Term of GIC								
d Was the regulatory safe harbor for establishing the fair market value of the GIC satisfied?								
6 Were any gross proceeds invested beyond an available temporary period?		X						
7 Has the organization established written procedures to monitor the requirements of section 148?	X							

Part V Procedures To Undertake Corrective Action

	A		B		C		D	
	Yes	No	Yes	No	Yes	No	Yes	No
Has the organization established written procedures to ensure that violations of federal tax requirements are timely identified and corrected through the voluntary closing agreement program if self-remediation is not available under applicable regulations?	X							

Part VI Supplemental Information. Provide additional information for responses to questions on Schedule K (see instructions).

Return Reference	Explanation
DATE REBATE COMPUTATION PERFORMED	ISSUER NAME MICHIGAN STRATEGIC FUND DATE THE REBATE COMPUTATION WAS PERFORMED 11/30/2014

SCHEDULE M
(Form 990)

Department of the Treasury
Internal Revenue Service

Noncash Contributions

►Complete if the organizations answered "Yes" on Form 990, Part IV, lines 29 or 30.
►Attach to Form 990.
►Information about Schedule M (Form 990) and its instructions is at www.irs.gov/form990

OMB No 1545-0047

2016

Open to Public Inspection

Name of the organization
VAN ANDEL RESEARCH INSTITUTE

Employer identification number
52-2000823

Part I

Types of Property

	(a) Check if applicable	(b) Number of contributions or items contributed	(c) Noncash contribution amounts reported on Form 990, Part VIII, line 1g	(d) Method of determining noncash contribution amounts
1 Art—Works of art				
2 Art—Historical treasures				
3 Art—Fractional interests				
4 Books and publications				
5 Clothing and household goods				
6 Cars and other vehicles				
7 Boats and planes				
8 Intellectual property				
9 Securities—Publicly traded	X	1	7,335,360	FMV
10 Securities—Closely held stock				
11 Securities—Partnership, LLC, or trust interests				
12 Securities—Miscellaneous				
13 Qualified conservation contribution—Historic structures				
14 Qualified conservation contribution—Other				
15 Real estate—Residential				
16 Real estate—Commercial				
17 Real estate—Other				
18 Collectibles				
19 Food inventory				
20 Drugs and medical supplies				
21 Taxidermy				
22 Historical artifacts				
23 Scientific specimens				
24 Archeological artifacts				
25 Other ► ()				
26 Other ► ()				
27 Other ► ()				
28 Other ► ()				

29 Number of Forms 8283 received by the organization during the tax year for contributions for which the organization completed Form 8283, Part IV, Donee Acknowledgement

29

0

30a During the year, did the organization receive by contribution any property reported in Part I, lines 1 through 28, that it must hold for at least three years from the date of the initial contribution, and which is not required to be used for exempt purposes for the entire holding period?

30a

No

b If "Yes," describe the arrangement in Part II

31 Does the organization have a gift acceptance policy that requires the review of any non-standard contributions?

31

No

32a Does the organization hire or use third parties or related organizations to solicit, process, or sell noncash contributions?

32a

No

b If "Yes," describe in Part II

33 If the organization did not report an amount in column (c) for a type of property for which column (a) is checked, describe in Part II

Part II**Supplemental Information.**

Provide the information required by Part I, lines 30b, 32b, and 33, and whether the organization is reporting in Part I, column (b), the number of contributions, the number of items received, or a combination of both. Also complete this part for any additional information.

Return Reference	Explanation
PART I, COLUMN (B)	VARI IS REPORTING THE NUMBER OF CONTRIBUTIONS RECEIVED DURING THE TAX YEAR

SCHEDULE O
(Form 990 or 990-EZ)

Department of the Treasury
Internal Revenue Service

Name of the organization
VAN ANDEL RESEARCH INSTITUTE

Supplemental Information to Form 990 or 990-EZ

Complete to provide information for responses to specific questions on Form 990 or 990-EZ or to provide any additional information.

▶ Attach to Form 990 or 990-EZ.

▶ Information about Schedule O (Form 990 or 990-EZ) and its instructions is at www.irs.gov/form990.

OMB No 1545-0047

2016

Open to Public Inspection

Employer identification number

52-2000823

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART VI, SECTION A, LINE 2	VARI, VAI, VAEI, AND VAIGS SHARE COMMON MANAGEMENT DAVID VAN ANDEL, DR JANA HALL AND TIMOTHY MYERS ARE ALSO OFFICERS OF VAI, AND DAVID VAN ANDEL AND TIMOTHY MYERS ARE OFFICERS OF VAEI AND VAIGS

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART VI, SECTION A, LINE 7A	THE TRUSTEES OF VAN ANDEL INSTITUTE HAVE THE AUTHORITY TO ELECT ONE OR MORE MEMBERS OF VARI'S GOVERNING BODY

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART VI, SECTION B, LINE 11B	FOLLOWING COMPLETION OF THE FINANCIAL STATEMENT AUDIT, THE FORM 990 IS PREPARED AND REVIEWED BY MANAGEMENT IT IS THEN CIRCULATED TO THE FULL BOARD FOR REVIEW AND COMMENTS PRIOR TO FILING WITH THE IRS

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART VI, SECTION B, LINE 12C	VARI HAS WRITTEN CONFLICT OF INTEREST ("COI") POLICIES AND PROCEDURES WHICH ADMINISTER AND ENFORCE A PROCESS TO IDENTIFY, EVALUATE, AND MANAGE POTENTIAL CONFLICTS OF INTEREST. THESE POLICIES HAVE BEEN APPROVED BY THE BOARD OF TRUSTEES. VAI ADMINISTERS COI POLICIES AND PROCEDURES THROUGH TWO STANDING COMMITTEES: THE CONFLICTS COMMITTEE ("CC") AND THE INSTITUTIONAL COI COMMITTEE ("ICOIC"). COI POLICIES AND PROCEDURES APPLY TO AND SERVE AS A GUIDE FOR EVERYONE IN THE ORGANIZATION. IN PARTICULAR, THEY PROVIDE A USEFUL RESOURCE FOR DEVELOPING ACTIVITIES OR RELATIONSHIPS WITH OUTSIDE ENTITIES OR PERSONS, AND ESTABLISH A PROCESS FOR COMMITTEES TO REVIEW AND MANAGE POTENTIAL CONFLICTS OF INTEREST AS THEY MAY ARISE. THE CC AND ICOIC ARE CHAIRED BY THE GENERAL COUNSEL. THE CC REQUIRES ANNUAL AND UPDATED DISCLOSURES BY COVERED PERSONS AND REVIEWS AND APPROVES MANAGEMENT PLANS. ICOIC POLICIES AND PROCEDURES SERVE AS A GUIDE FOR BOARDS OF TRUSTEES AND SENIOR EXECUTIVES. IN THE EVENT A POTENTIAL COI ARISES AT THE BOARD OR SENIOR EXECUTIVE LEVEL, THE ICOIC MEETS TO REVIEW AND DETERMINE HOW TO MANAGE SUCH A POTENTIAL CONFLICT OF INTEREST IN ACCORDANCE WITH THE COI POLICIES AND PROCEDURES.

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART VI, SECTION B, LINE 15	COMPARABILITY DATA FROM EXPERT THIRD PARTY IS OBTAINED AND REVIEWED BY THE INDEPENDENT, JOINT COMPENSATION COMMITTEE OF VAN ANDEL RESEARCH INSTITUTE AND RELATED ORGANIZATIONS TO DETERMINE APPROPRIATE COMPENSATION FOR THE CEO, EXECUTIVE MANAGEMENT OFFICIALS, OFFICERS, AND KEY EMPLOYEES, ON BEHALF OF VAN ANDEL RESEARCH INSTITUTE

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART VI, SECTION C, LINE 19	ALL DOCUMENTS REQUIRED TO BE MADE AVAILABLE TO THE PUBLIC ARE AVAILABLE FOR PUBLIC INSPECTION UPON WRITTEN REQUEST

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART XI, LINE 9	GAIN ON INTEREST RATE SWAP 7,335,352

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART III, LINE 2	VAN ANDEL RESEARCH INSTITUTE (VARI) IS DEDICATED TO DETERMINING THE EPIGENETIC, GENETIC, MOLECULAR, AND CELLULAR ORIGINS OF CANCER, PARKINSON'S DISEASE, AND OTHER ILLNESSES AND TO TRANSLATING THOSE FINDINGS INTO EFFECTIVE THERAPIES. THE INSTITUTE'S SCIENTISTS WORK IN ON-SITE LABORATORIES AND PARTICIPATE IN COLLABORATIONS THAT SPAN THE GLOBE. WITH EPIGENETICS AS ITS COMMON THREAD, VARI IS ORGANIZED INTO THE CENTER FOR CANCER AND CELL BIOLOGY, THE CENTER FOR EPIGENETICS, AND THE CENTER FOR NEURODEGENERATIVE SCIENCE. THE CORE TECHNOLOGIES AND SERVICES GROUP PROVIDES A VIVARIUM, A BIOREPOSITORY, AND VALUABLE ON-SITE CAPABILITIES IN IMAGING, PATHOLOGY, BIOINFORMATICS, GENOMICS, FLOW CYTOMETRY, AND CRYO-ELECTRON MICROSCOPY. RESEARCH BY VARI SCIENTISTS WAS PUBLISHED IN 136 ARTICLES IN MAJOR PEER-REVIEWED JOURNALS THAT INCLUDED NATURE, NATURE COMMUNICATIONS, NATURE GENETICS, CELL, PHYSIOLOGICAL REVIEWS, CELL RESEARCH, CELL REPORTS, GENES AND DEVELOPMENT, CLINICAL CANCER RESEARCH, NUCLEIC ACIDS RESEARCH, PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES U S A, ONCOGENE, CANCER CELL, BONE, NEURON, HUMAN MOLECULAR GENETICS, NATURE REVIEWS NEUROLOGY, LANCET NEUROLOGY, MOLECULAR CARCINOGENESIS, EPIGENETICS AND CHROMATIN, JOURNAL OF VIROLOGY, JOURNAL OF BIOLOGICAL CHEMISTRY, JOURNAL OF CELL SCIENCE, ANALYTICAL CHEMISTRY, SCIENTIFIC REPORTS, JOURNAL OF BACTERIOLOGY, JOURNAL OF PARKINSON'S DISEASE, JOURNAL OF NEUROSCIENCE, NEUROPHARMACOLOGY, MOVEMENT DISORDERS, BIOCHEMISTRY, CANCER LETTERS, NEUROBIOLOGY OF DISEASE, JOURNAL OF MOLECULAR NEUROSCIENCE, GENOME BIOLOGY, PROTEIN SCIENCE, PLOS ONE, ONCOTARGET, AND PLOS PATHOGENS.

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART III, LINE 4A	LINE 4A - PROGRAM SERVICE ACTIVITY #1 CENTER FOR CANCER AND CELL BIOLOGY THE CENTER FOR CA NCER AND CELL BIOLOGY, DIRECTED BY BART WILLIAMS, PH D , COMPRISES 12 LABORATORIES ENGAGED IN BASIC RESEARCH IN MOLECULAR AND STRUCTURAL BIOLOGY AND IN TRANSLATIONAL RESEARCH ON CA NCERS, THE TUMOR MICROENVIRONMENT, AND SKELETAL DISEASES DR WEI LU AND JUAN DU JOINED TH E CENTER DURING THE YEAR IN THIS FISCAL YEAR, RESEARCHERS WITHIN THE CENTER RECEIVED A NE W R01 AWARD FROM THE NATIONAL INSTITUTES OF HEALTH, NEW AWARDS FROM THE ARTHRITIS NATIONAL RESEARCH FOUNDATION, ST BALDRICK'S FOUNDATION, AND ALEX'S LEMONADE STAND, AND A RENEWAL AWARD FROM THE BREAST CANCER RESEARCH FOUNDATION A NEW RESEARCH CONTRACT WAS SIGNED IN 20 17, AND FIVE GRANT SUBAWARDS WERE ALSO RECEIVED THE NEW VARI SUITE OF CRYOGENIC-ELECTRON MICROSCOPY (CRYO-EM) INSTRUMENTS BEGAN OPERATION IN SPRING 2017 THE LU LABORATORY MADE EX CELLENT USE OF THIS NEW CAPABILITY TO DETERMINE THE STRUCTURE OF THE CA(2+)-ACTIVATED, NON -SELECTIVE HUMAN TRPM4 ION CHANNEL BOUND TO THE CA(2+) ION AND A MODULATOR THIS MOLECULE IS COMMON IN HUMAN CELLS AND DIRECTLY AFFECTS CRUCIAL PROCESSES SUCH AS CARDIAC RHYTHM, CE LL DEPOLARIZATION, AND THE IMMUNE RESPONSE (WINKLER ET AL , NATURE 552(7684) 200-204) OT HER MOLECULAR STRUCTURE STUDIES ALSO MADE IMPORTANT SCIENTIFIC ADVANCES JASMONATE IS A PL ANT HORMONE VITAL IN NORMAL DEVELOPMENT AND IN RESPONDING TO STRESSES LIKE DROUGHT THE ST RUCTURE OF A KEY CELL SIGNALING NODE CALLED THE MYC3-CMID COMPLEX WAS DETERMINED BY THE ME LCHER LAB THIS STRUCTURE SHOWED THE MOLECULAR MECHANISM THAT IS USED BY PLANT CELLS TO AP PROPRIATELY CONTROL HORMONAL SIGNALING (ZHANG ET AL , PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES U S A 117(7) 1720-1725) THE MELCHER AND XU LABS ALSO STUDIED THE GLUCAGON R ECEPTOR, WHICH HAS A CENTRAL ROLE IN GLUCOSE METABOLISM AND HOMEOSTASIS AND THUS IS A KEY THERAPEUTIC TARGET IN DIABETES AND OBESITY THE LABS DISCOVERED TWO WAYS TO ACTIVATE THE R ECEPTOR, WHICH IS IMPORTANT PHARMACOLOGICALLY, AND ONE OF THOSE PROVIDES A MODEL FOR HOW O THER CLASS B G-PROTEIN-COUPLED RECEPTORS FUNCTION (YIN ET AL , JOURNAL OF BIOLOGICAL CHEMI STRY 292(24) 9865-9881) WNT SIGNALING AFFECTS PROCESSES SUCH AS EMBRYOGENESIS AND THE DE VELOPMENT OF CANCER, BUT HOW WNT SIGNALING IS ACTIVATED IS POORLY UNDERSTOOD A STUDY OF T HE STRUCTURE OF WNT5A BOUND TO THE FRIZZLED RECEPTOR BY THE MELCHER AND XU LABS FOUND THAT WNT BINDING CAUSED TWO DOMAINS OF THE RECEPTOR TO BIND TOGETHER THIS KNOWLEDGE IMPROVES OUR UNDERSTANDING OF HOW WNT SIGNALING FUNCTIONS WITHIN THE CELL AND AT THE CELL MEMBRANE (DEBRUINE ET AL , GENES AND DEVELOPMENT 31(9) 916-926) THE GROHAR LAB CONDUCTED A PHASE I/II TRIAL TO DETERMINE THE DOSE-LIMITING TOXICITY, MAXIMUM TOLERATED DOSE, AND PHARMACOKI NETICS OF MITHRAMYCIN AGAINST REFRACTORY SOLID TUMORS AND REFRACTORY EWING SARCOMA LIVER TOXICITY PRECLUDED THE ADMINISTRATION OF MITHRAMYCIN AT A DOSE REQUIRED TO INHIBIT THE EWS -FLI1 TRANSCRIPTION FACTOR, A

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART III, LINE 4A	KEY DRIVER OF EWING SARCOMA TUMORS (GROHAR ET AL , CANCER CHEMOTHERAPY AND PHARMACOLOGY 80 (3) 645-652) IN A STUDY OF 201 PATIENTS WITH PRIMARY GASTRIC CARCINOMA, THE VANDE WOUDE LAB AND COLLABORATORS FOUND THAT THE EXPRESSION OF THE MET4 RECEPTOR PREDICTED POOR PROGNOSIS OF GASTRIC CANCERS WITH H. PYLORI INFECTION. H. PYLORI STIMULATED MET-POSITIVE GASTRIC CANCERS AND ACTIVATED MET DOWNSTREAM SIGNALING, PROMOTING CANCER PROLIFERATION AND ANTI-APOPTOTIC ACTIVITY (SAKAMOTO ET AL , CANCER SCIENCE 108(3) 322-330). THE VANDE WOUDE LAB ALSO PUBLISHED A STUDY OUTLINING A PARADIGM OF TUMOR METASTASIS. PRIMARY EPITHELIAL CARCINOMA CELLS THAT LOSE CHROMOSOMES CARRYING GENES FOR INTERCELLULAR JUNCTIONS DEVELOP AN INVASIVE PHENOTYPE, AND SUBSEQUENT CHROMOSOME CHANGES (SUCH AS LOSS OF 10P) GENERATE CELLS THAT CAN GENERATE EPITHELIAL TUMORS AT THE METASTATIC SITE (GAO, ET AL , PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES U S A 113(51) 14793-14798). THE WILLIAMS LAB PUBLISHED A STUDY ON HOW THE LOSS OF THE TUMOR SUPPRESSORS SMAD4 AND APC IN LUMINAL PROSTATE CELLS PRODUCE D INVASIVE, CASTRATION-RESISTANT PROSTATE CANCER IN MICE. THOSE CELLS ALSO COMMONLY LOST THE ANDROGEN RECEPTOR. UPON ANDROGEN CYCLING, TUMORS WERE FOUND TO DISAPPEAR IN THESE MICE (VALKENBURG ET AL , ONCOTARGET 8(46) 80265-80277). THE LAB ALSO FOUND THAT WHILE DELETION OF THE CDC73 GENE IN MESENCHYMAL PROGENITOR CELLS CAUSED EMBRYONIC DEATH, A SIMILAR DELETION IN OSTEOBLASTS AND OSTEOCYTES INCREASED CORTICAL AND TRABECULAR BONE MASS. THESE RESULTS REFLECT THE ROLE OF PARAFIBROMIN IN TRANSCRIPTIONAL REGULATION, TERMINAL DIFFERENTIATION, AND BONE HOMEOSTASIS (DROSCHA ET AL , BONE 98 68-78). THE YANG LABORATORY DEVELOPED A MOUSE MODEL HAVING A MUTATED SCLT1 GENE, WHICH CAUSED A LOSS OF CILIA IN KIDNEY CELLS AND RESULTED IN CYSTIC KIDNEY, AMONG OTHER SYMPTOMS. THE DATA SUGGEST THAT INHIBITION OF STAT3 MAY BE A PROMISING TARGET FOR TREATING SCLT1-RELATED CYSTIC KIDNEY DISEASE (LI ET AL , HUMAN MOLECULAR GENETICS 26(15) 2949-2960). THE WU LAB FOUND THAT THIOREDOXIN INTERACTING PROTEIN (TXNIP) IS RESPONSIBLE FOR MEDIATING AKT-DEPENDENT ACUTE GLUCOSE INFLUX AFTER GROWTH FACTOR STIMULATION. TXNIP FUNCTIONS AS AN ADAPTOR FOR THE BASAL ENDOCYTOSIS OF GLUT4 IN VIVO, ITS ABSENCE ALLOWS EXCESS GLUCOSE UPTAKE IN MUSCLE AND ADIPOSE TISSUES, CAUSING HYPOGLYCEMIA DURING FASTING. THUS, TXNIP SERVES AS A KEY NODE OF SIGNAL REGULATION FOR MODULATING GLUCOSE INFLUX THROUGH GLUCOSE TRANSPORTERS GLUT1 AND GLUT4 (WALDHART ET AL , CELL REPORTS 19(10) 2005-2013). THE MACKEIGAN LAB PUBLISHED A CATALOG OF THE GENOMIC LANDSCAPE OF TUBEROUS SCLEROSIS COMPLEX (TSC) HAMARTOMAS. THEY DETERMINED THAT TSC LESIONS CONTAIN A LOW MUTATIONAL BURDEN RELATIVE TO CARCINOMAS, BUT A SUBSET OF THE TUMORS HAVE LARGE-SCALE CHROMOSOMAL ABERRATIONS, AND HIGHLY CONSERVED MOLECULAR SIGNATURES FOR EACH TYPE EXIST. THE PAPER PROVIDES A FRAMEWORK THAT UNIFIES THE GENOMIC AND TRANSCRIPTOMIC DIMENSIONS OF COMPLEX TUMORS (MARTIN, ET AL , NA

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART III, LINE 4A	TURE COMMUNICATIONS 8 15816) THE HAAB LAB CONTINUED ITS WORK ON CHARACTERIZING THE PROTEINS FOUND IN PANCREATIC CANCER THEY DEVELOPED AN ASSAY FOR OBTAINING INFORMATION ABOUT PROTEIN GLYCOSYLATION USING A MINIMAL AMOUNT (11 NANOGRAMS) OF PROTEIN, AS WELL AS AN ALGORITHM TO INTERPRET THE DATA AND PROVIDE PREDICTIONS ABOUT THE GLYCAN MOTIFS PRESENT IN THE SAMPLE THE METHOD WAS ALSO EFFECTIVE FOR ANALYZING THE GLYCOSYLATION OF A CANCER BIOMARKER IN HUMAN PLASMA, MUC5AC, USING ONLY 20 MICROLITERS OF PLASMA (REATINI ET AL , ANALYTICAL CHEMISTRY 88(23) 11584-11592) THEY ALSO DEVELOPED A LANGUAGE AND AN ALGORITHM FOR THE ANALYSIS AND DESCRIPTION OF HIGHLY COMPLEX GLYCAN MOTIFS THE ALGORITHM EVALUATES CHANGES IN LECTIN BINDING UPON TREATMENT WITH EXOGLYCOSIDASES THE COMPLEX FEATURES IDENTIFIED WERE NOT ACCESSIBLE TO ANALYSIS USING PREVIOUS METHODS THIS WORK WILL FACILITATE THE PRECISE DETERMINATION AND DESCRIPTION OF LECTIN AND GLYCOSIDASE SPECIFICITIES (KLAMER ET AL , ANALYTICAL CHEMISTRY 89(22) 12342-12350) IN A THIRD PAPER, THE HAAB LAB IDENTIFIED A CARBOHYDRATE ANTIGEN, STRA THAT IS AS ACCURATE A SERUM BIOMARKER OF PANCREATIC CANCER AS THE CANCER ANTIGEN CA19-9 THE STRA AND CA19-9 GLYCANS DEFINE SEPARATE SUBPOPULATIONS OF CANCER CELLS AND COULD TOGETHER HAVE VALUE FOR CLASSIFYING SUBTYPES OF PANCREATIC ADENOCARCINOMA (BARNETT ET AL , SCIENTIFIC REPORTS 7 4020)

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART III, LINE 4B	LINE 4B - PROGRAM SERVICE ACTIVITY #2 CENTER FOR EPIGENETICS THE CENTER, ESTABLISHED IN 2014 AND DIRECTED BY PETER JONES, PH.D., D.Sc., COMPRISES TEN LABORATORIES STUDYING EPIGENETICS AND EPIGENOMICS AND THE ROLE OF EPIGENETIC DYSFUNCTION IN CANCER AND NEURODEGENERATIVE DISEASE, CARDIOVASCULAR DISEASE, AND VIRAL TRANSCRIPTION. DR. TIMOTHY TRICHE JR. JOINED THE CENTER IN LATE 2017. NEW FUNDING IN THIS FISCAL YEAR FOR CENTER RESEARCHERS INCLUDED TWO R35 AWARDS, TWO R01 AWARDS, AND AN F31 GRANT FROM THE NATIONAL INSTITUTES OF HEALTH, A NEW GRANT FROM THE MICHIGAN ECONOMIC DEVELOPMENT CORPORATION, AND AN AMERICAN CANCER SOCIETY FELLOWSHIP. THE VARI-SU2C EPIGENETICS DREAM TEAM, LED BY PETER JONES AND STEPHEN BAYLIN, CONTINUED IN 2017 WITH ITS AIMS OF DEVELOPING NEW COMBINATION THERAPIES TO COMBAT CANCER AND MOVING PROMISING THERAPIES INTO CLINICAL TRIALS. THE TEAM FOCUSES ON EPIGENETIC MECHANISMS IN CELLS, WHICH HELP CONTROL WHETHER GENES ARE TURNED ON OR OFF WITHOUT CHANGING THE DNA SEQUENCE ITSELF. THIS IS DONE PRIMARILY BY THE ADDITION OR REMOVAL OF METHYL GROUPS TO THE DNA OR ADDITION/REMOVAL OF ACETYL GROUPS FROM THE HISTONE PROTEINS THE DNA IS WRAPPED AROUND. THE TEAM WAS AWARDED TWO OF THE TEN NEW SU2C CATALYST GRANTS FOR STUDIES OF EPIGENETIC THERAPIES AGAINST LUNG AND BLADDER CANCER. BOTH THE LAIRD AND SHEN LABORATORIES CONTRIBUTED TO A SERIES OF STUDIES UNDER THE CANCER GENOME ATLAS RESEARCH NETWORK THAT PRODUCED GENOMIC AND MOLECULAR CHARACTERIZATIONS OF VARIOUS CANCERS, INCLUDING ESOPHAGEAL CARCINOMA AND PANCREATIC DUCTAL ADENOCARCINOMA. THESE STUDIES PROVIDE A FRAMEWORK FOR MORE RATIONAL CATEGORIZING OF TUMORS AND A FOUNDATION FOR NEW THERAPIES (CANCER GENOME ATLAS RESEARCH NETWORK, CANCER CELL 32(2): 185-203 E13, CELL 171(4): 950-965, NATURE 541 (7636): 169-175, CHERNIACK ET AL., CANCER CELL 31(3): 411-423). THE TWO LABS ALSO WERE COAUTHORS ON A STUDY OF 1000 BREAST CANCER SAMPLES THAT ACCURATELY CLASSIFIED MUTATIONS OF THE BRCA1 OR BRCA2 GENES KNOWN TO IMPAIR HOMOLOGOUS DNA RECOMBINATION. EPIGENETIC SILENCING OF THE RAD51C AND BRCA1 GENES BY PROMOTER METHYLATION WAS FREQUENTLY FOUND IN BASAL-LIKE BREAST CANCERS OF YOUNG INDIVIDUALS OF AFRICAN DESCENT (POLAK, NATURE GENETICS 49(10): 1476-1486). THE JONES LAB PUBLISHED A STUDY OF THE CHROMATIN REMODELING MOLECULE ARID1A, WHICH IS OFTEN MUTATED IN OVARIAN CLEAR CELL CARCINOMA (OCCC) AND ENDOMETRIOSIS PRECURSOR LESIONS. KNOCKING DOWN ARID1A IN AN IMMORTALIZED ENDOMETRIOSIS CELL LINE WAS SUFFICIENT TO PRODUCE CHANGES INDICATIVE OF NEOPLASTIC TRANSFORMATION, AS EVIDENCED BY HIGHER EFFICIENCY OF ANCHORAGE-INDEPENDENT GROWTH, INCREASED PROPENSITY TO ADHERE TO COLLAGEN, AND GREATER CAPACITY TO INVADE BASEMENT MEMBRANE EXTRACT IN VITRO (LAKSHMINARASIMHAN ET AL., CANCER LETTERS 401: 11-19). IN ANOTHER STUDY, THE LAB CATEGORIZED THE AGGRESSIVENESS OF INDIVIDUAL PROSTATE CANCER FOCI BASED ON DNA METHYLATION PATTERNS IN PRIMARY FOCI AND MATCHED LYMPH NODE METASTASES. THIS STUDY PROVIDES A CLASSIFICATION

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART III, LINE 4B	ON OF PROSTATE CANCER AGGRESSIVENESS THAT HAS THE POTENTIAL TO IMPROVE CLINICAL DECISION-MAKING, SUCH AS TARGETED BIOPSY APPROACHES FOR EARLY DIAGNOSIS AND ACTIVE SURVEILLANCE (MUNDBJERG ET AL, GENOME BIOLOGY 18(1) 3) IN A STAND UP TO CANCER COLLABORATIVE STUDY, THE LAB PARTICIPATED IN THE FIRST TRIAL OF CRC PATIENTS WITH COMBINATION EPIGENETIC THERAPY. THE TRIAL SHOWED TOLERABLE THERAPY WITHOUT SIGNIFICANT CLINICAL ACTIVITY, AS DETERMINED BY RECIST RESPONSES. A REVERSAL OF HYPERMETHYLATION WAS SEEN IN A SUBSET OF PATIENTS, AND THAT REVERSAL CORRELATED WITH IMPROVED PROGRESSION-FREE SURVIVAL (AZAD ET AL, ONCOTARGET 8(2) 1) 35326-35338). HUILIN LI'S LAB PUBLISHED SEVERAL STRUCTURAL STUDIES. THEIR PAPER ON THE MCM2-7 HELICASE CORE EMPLOYED THE NEW CRYO-EM INSTRUMENTS INSTALLED AT VARI IN 2017. THE ARCHITECTURE OF THE CORE DOUBLE HEXAMER SUGGESTS THAT DNA LAGGING-STRAND EXTRUSION BEGINS IN THE MIDDLE AREA THAT IS COMPOSED OF THE ZINC FINGER DOMAINS OF BOTH HEXAMERS. THE N-TIE R RING MOVEMENTS MAY BE THE CAUSE OF DNA STRAND SEPARATION AND LAGGING-STRAND EXTRUSION (NOGUCHI ET AL, PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES U S A 114(45) E9529-E9538). ALSO PUBLISHED WAS THE CRYSTAL STRUCTURE OF NEARLY FULL-LENGTH HEXAMERIC ATPASE FROM MYCOBACTERIUM TUBERCULOSIS, THE BACTERIUM THAT CAUSES TUBERCULOSIS. THE STRUCTURE SHOWED AN UBIQUITIN-LIKE BETA-GRASP DOMAIN THAT PRECEDES THE PROTEASOME-ACTIVATING CARBOXYL TERMINUS. THIS STRUCTURE EXPLAINS WHY MPA IS UNABLE TO STIMULATE ROBUST PROTEIN DEGRADATION IN VITRO IN THE ABSENCE OF OTHER, YET-TO-BE-IDENTIFIED CO-FACTORS (WU ET AL, MOLECULAR MICROBIOLOGY 105(2) 227-241). ANOTHER PROJECT ANALYZED M. TUBERCULOSIS HOMOLOGUES OF THE EUKARYOTIC PROTEASOME CHAPERONE PROTEIN PAC2. THE LAB SOLVED THE STRUCTURE OF A PREDICTED PROTEASOME ASSEMBLY FACTOR, RV2125, AND ISOLATED A GENETIC MUTANT OF RV2125 IN M. TUBERCULOSIS. THE STUDY INDICATED THAT PROTEINS RV2125 AND RV2714 DO NOT FUNCTION AS PROTEASOME ASSEMBLY CHAPERONES AND ARE UNLIKELY TO HAVE ROLES IN PROTEASOME BIOLOGY IN MYCOBACTERIA (BAI ET AL, JOURNAL OF BACTERIOLOGY 19(9) E00846-16). THE ROTHBART LABORATORY DEVELOPED AN INTEGRATED PIPELINE FOR THE DESIGN, FABRICATION, AND USE OF PEPTIDE MICROARRAYS FOR PROFILING THE SPECIFICITY OF HISTONE ANTIBODIES. THIS PIPELINE HAS BEEN USED TO SCREEN MANY COMMERCIAL, WIDELY USED HISTONE ANTIBODIES, AND DATA FROM THESE EXPERIMENTS ARE FREELY AVAILABLE THROUGH THE ONLINE HISTONE ANTIBODY SPECIFICITY DATABASE. THIS METHODOLOGY CAN BE BROADLY APPLIED TO THE ANALYSIS OF ANTIBODIES SPECIFIC TO PROTEINS HAVING POST-TRANSLATIONAL MODIFICATIONS (CORNETT ET AL, JOURNAL OF VISUALIZED EXPERIMENTS 126 E55912). IN THE TRIEZENBERG LAB, THE HUMAN-DERIVED HD10.6 CELL LINE WAS DEVELOPED, WHICH HAS THE PROPERTIES OF A SENSORY NEURON. HERPES SIMPLEX VIRUS INFECTION IN THESE CELLS RESEMBLES A LATENT INFECTION, INCLUDING REACTIVATION TO PRODUCE NEWLY INFECTIONOUS VIRUS, REACTIVATION CAN BE INDUCED BY DEPLETION OF NERVE GROWTH FACTOR. THE

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART III, LINE 4B	US, WE NOW HAVE A CELL CULTURE MODEL FOR LATENCY THAT IS DERIVED FROM THE NORMAL HOST FOR THIS VIRUS (THELLMAN ET AL , JOURNAL OF VIROLOGY 91(12) 00080-17) THE PFEIFER LAB COAUTH ORED AN ARTICLE REPORTING THAT SCIATIC NERVE LESIONS IN ADULT MICE LED TO INCREASED AMOUNT S OF TET3 AND 5-HYDROXYMETHYLCYTOSINE IN DORSAL ROOT GANGLION (DRG) NEURONS TET3 IS REQUI RED FOR ROBUST AXON REGENERATION OF DRG NEURONS AND BEHAVIORAL RECOVERY THE STUDY'S RESUL TS SUGGEST THAT THERE IS AN EPIGENETIC BARRIER THAT CAN BE REMOVED BY ACTIVE DNA DEMETHYLA TION TO PERMIT AXON REGENERATION IN THE ADULT MAMMALIAN NERVOUS SYSTEM (NEURON 94(2) 337- 346)

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Return Reference	Explanation
FORM 990, PART III, LINE 4C	LINE 4C - PROGRAM SERVICE ACTIVITY #3 CENTER FOR NEURODEGENERATIVE SCIENCE THE CENTER WAS ESTABLISHED IN 2011 UNDER PATRIK BRUNDIN, M D , PH D , WHO IS ALSO ASSOCIATE DIRECTOR OF VARI THE CENTER CURRENTLY HAS SEVEN LABORATORIES STUDYING PARKINSON'S DISEASE, AGING, PRIONS, AND THE RELATIONSHIPS BETWEEN DEPRESSION, SUICIDE, AND BRAIN INFLAMMATION CENTER RESEARCHERS DURING THIS FISCAL YEAR RECEIVED FOUR NEW NATIONAL INSTITUTES OF HEALTH AWARDS, THREE R01'S AND AN R21, AS WELL AS AWARDS FROM THE U.S. DEPARTMENT OF DEFENSE, THE CURE PARKINSON'S TRUST, THE PARKINSON'S DISEASE FOUNDATION, AND THE AMERICAN PARKINSON'S DISEASE FOUNDATION A NEW RESEARCH CONTRACT WAS SIGNED AND A GRANT SUBAWARD WAS ALSO RECEIVED THE COETZEE LABORATORY FOCUSES ON THE APPLICATION OF GENOME-WIDE ASSOCIATION STUDIES (GWAS) TO PARKINSON'S DISEASE IN ONE STUDY, THEY ANALYZED 7607 SINGLE-NUCLEOTIDE CHANGES (SNPS) IN GENES RELATED TO PARKINSON'S DISEASE RISK, AS WELL AS 23,759 LD-ASSOCIATED VARIANTS A SINGLE LARGE LD BLOCK ON CHROMOSOME 6 (6P21) CONTAINED MULTIPLE HLA-MHC-II GENES THESE GENES CODE FOR PROTEINS THAT FORM PART OF THE BODY'S IMMUNE SYSTEM, SUGGESTING A DIRECT EFFECT ON THE ORIGIN OF PARKINSON'S DISEASE (PIERCE AND COETZEE, PLOS ONE 12(4) E0175882) THE LAB ALSO CONTRIBUTED TO THE WORK OF THE ONCOARRAY CONSORTIUM THE CONSORTIUM GENOTYPED 447,705 SAMPLES A TOTAL OF 494,763 SNPS PASSED QUALITY CONTROL STEPS WITH A SAMPLE SUCCESS RATE OF 97% ONGOING ANALYSES WILL SHED LIGHT ON THE ETIOLOGY OF, AND RISK ASSESSMENT FOR, MANY TYPES OF CANCER (AMOS ET AL , CANCER, EPIDEMIOLOGY, BIOMARKERS & PREVENTION 26(1) 126-135) THE MA LABORATORY PUBLISHED THE RESULTS OF SEVERAL STUDIES ON PRION PROTEIN AND PRION DISEASE ONE PROJECT INVESTIGATED THE ROLE OF FOUR CONSECUTIVE THREONINE AMINO ACIDS IN THE PRION PROTEIN SEQUENCE THREONINES TEND TO FORM BETA-SHEET STRUCTURES, WHICH IS A PRIMARY STRUCTURE OF PATHOGENIC PRIONS THE STUDY PROVIDED NEW INSIGHTS INTO THE COMPLEX RELATIONSHIPS AMONG PRION PROTEIN STABILITY, THE CONFORMATIONAL CHANGE FROM NORMAL TO PATHOGENIC PROTEIN, AND THE STRUCTURE OF PRIONS (ABSKHARON ET AL , SCIENTIFIC REPORTS 6 38877) IN ANOTHER PROJECT, DIFFERENT PROTEASE-RESISTANT, RECOMBINANT PRION PROTEIN CONFORMERS (RPRP-RES) HAD SIMILARITIES IN RECOGNITION BY CONFORMATIONAL ANTIBODIES AGAINST PRIONS AND IN THEIR GUANIDINE HYDROCHLORIDE DENATURATION PROFILES, SUGGESTING A SIMILAR OVERALL ARCHITECTURE THE STUDY SUGGESTS THAT RELATIVELY SMALL STRUCTURAL FEATURES DETERMINE RPRP-RES PATHOGENICITY AND THAT IN VIVO SEEDING ABILITY DOES NOT NECESSARILY RESULT IN PATHOGENICITY (WANG ET AL , PLOS PATHOGENS 13(7) E1006491) THE LAB ALSO COLLABORATED ON A PAPER SHOWING THE INHIBITION OF FAST AXONAL TRANSPORT AS A TOXIC EFFECT OF CELLULAR PRION PROTEIN THIS EFFECT INVOLVES ACTIVATION OF CASEIN KINASE 2 (CK2), WHICH PHOSPHORYLATES AND INHIBITS LIGHT CHAIN SUBUNITS OF THE PROTEIN KINESIN CK2 MAY BE A THERAPEUTIC TARGET FOR PREVENTING THE LOSS OF NEURONAL CONNECTIVITY

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART III, LINE 4C	TY IN PRION DISEASES (ZAMPONI ET AL , PLOS ONE 12(12) E0188340) THE LABORATORY OF PATRIK BRUNDIN STUDIES THE ORIGIN OF PARKINSON'S DISEASE AND WORKS TO DEVELOP NEW WAYS TO SLOW OR HALT ITS PROGRESSION THE LAB HAS GENERATED A C. ELEGANS MODEL THAT MIRRORS THE PROPAGATION OF ALPHA-SYNUCLEIN AGGREGATES IN THE BRAIN, THESE AGGREGATES ARE THE HALLMARK OF PARKINSON'S DISEASE USING THIS MODEL, THE NEURON-TO-NEURON TRANSMISSION OF ALPHA-SYNUCLEIN CAN BE MONITORED IN A LIVE ANIMAL OVER ITS LIFE SPAN CHANGES IN AUTOPHAGY OR EXO/ENDOCYTOSIS WERE FOUND TO AFFECT THE TRANSFER OF ALPHA-SYNUCLEIN (TYSON ET AL , SCIENTIFIC REPORTS 7 7506) ANOTHER PUBLICATION WAS A REVIEW OF FINDINGS THAT SUPPORT THE IDEA THAT ALPHA-SYNUCLEIN CAN ACT AS A PRION, FOCUSING ON TRIGGERS OF ALPHA-SYNUCLEIN MISFOLDING, WHY SYNUCLEIN AGGREGATES ESCAPE CELLULAR DEGRADATION UNDER DISEASE CONDITIONS, AND WHETHER DIFFERENT STRAINS OF ALPHA-SYNUCLEIN FIBRILS CAN UNDERLIE DIFFERENCES IN THE DISTRIBUTION OF AGGREGATES IN DIFFERENT SYNUCLEIN-RELATED DISEASES (BRUNDIN AND MELKI, JOURNAL OF NEUROSCIENCE 37(41) 9808-9818) DR BRUNDIN ALSO COAUTHORED A COMPREHENSIVE OVERVIEW OF PARKINSON'S DISEASE (NATURE REVIEWS DISEASE PRIMERS 3 17013) DR LENA BRUNDIN'S LAB STUDIES DEPRESSION, SUICIDALITY, AND BRAIN INFLAMMATION ONE PROJECT STUDIED THE INFLAMMATION BIOMARKERS SERUM AMYLOID A (SAA), C-REACTIVE PROTEIN, INTERLEUKIN-6, AND TUMOR NECROSIS FACTOR ALPHA SAA WAS MOST ROBUSTLY ASSOCIATED WITH DEPRESSIVE SYMPTOMS AND MIGHT CONSTITUTE A CROSS-MARKER OF DEPRESSED MOOD AND FATIGUE (ACTA PSYCHIATRICA SCANDINAVICA 135(5) 409-418) IN COLLABORATION WITH THE PATRIK BRUNDIN LABORATORY, THE LAB LOOKED AT EXENDIN-4, A DRUG THAT IS IN CLINICAL TRIALS AGAINST PARKINSON'S DISEASE, TO SEE WHETHER IT DIRECTLY REDUCES BRAIN INFLAMMATION EXENDIN-4 TREATMENT SIGNIFICANTLY PREVENTED DEPRESSIVE-LIKE BEHAVIOR AT 24 H AFTER INJECTION OF LIPOPOLYSACCHARIDE, INDICATING THAT THE DRUG ENGAGED A TARGET IN THE BRAIN, POSSIBLY AFFECTING DOPAMINE METABOLISM (VENTORP ET AL , JOURNAL OF PARKINSON'S DISEASE 7(2) 263-273) THE MOORE LAB PUBLISHED A STUDY OF THE PARKINSON'S DISEASE-RELATED PROTEIN CALLED PARKIN, WHICH IS ASSOCIATED WITH CERTAIN EARLY-ONSET CASES AND WHICH CONTROLS TRANSCRIPTION OF THE PGC-1A PROTEIN THAT REGULATES MITOCHONDRIA IN CORTICAL NEURONS, COEXPRESSION OF PGC-1A AND PARKIN INCREASED THE NUMBER OF MITOCHONDRIA AND ENHANCED MAXIMAL RESPIRATION, AMONG OTHER EFFECTS MITOCHONDRIA ARE IMPORTANT FOR THE SURVIVAL OF NEURONS IN PARKINSON'S DISEASE, AND THESE RESULTS HIGHLIGHT THE IMPORTANCE OF PARKIN AND PGC-1A IN SYNERGISTICALLY CONTROLLING MITOCHONDRIAL QUALITY AND FUNCTION (ZHENG ET AL , HUMAN MOLECULAR GENETICS 26(3) 582-598) THE LAB ALSO PUBLISHED CRITICAL REVIEWS ON MECHANISMS OF LRRK2-DEPENDENT NEURODEGENERATION (ISLAM AND MOORE, BIOCHEMICAL SOCIETY TRANSACTIONS 45(1) 163-172) AND ON THE ROLE OF VPS35 IN PARKINSON'S DISEASE AND THE MECHANISMS UNDERLYING NEURODEGENERATION CAUSED BY MUTATIONS IN IT

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART III, LINE 4C	HE VPS35 GENE (WILLIAMS ET AL , JOURNAL OF PARKINSON'S DISEASE 7(2) 219-233) BECAUSE DIFFERENCES IN DNA TRANSCRIPTION IN HISTOLOGICALLY AND GENETICALLY IDENTICAL CELLS IS WIDESPREAD, BUT POORLY UNDERSTOOD, THE LABRIE LAB ANALYZED EPIGENETIC PROFILES OF THE MOUSE LACTASE GENE (LCT) IN CELLS OF THE SMALL INTESTINE AGE- AND PHENOTYPE-SPECIFIC FACTORS (E G , LACTOSE EXPOSURE AFTER WEANING) PRODUCED CHANGES IN THE EPIGENETIC MODIFICATIONS AND CTCF BINDING AT SOME REGULATORY ELEMENTS, WHICH CORRESPONDED TO THE CHANGES IN TRANSCRIPTION SUCH CHANGES MAY CONTRIBUTE TO THE FUNCTIONAL SPECIALIZATION OF THE CELLS IN INTESTINAL SUB REGIONS (OH ET AL , SCIENTIFIC REPORTS 7 41843) THE HYPOTHESIS THAT ABNORMAL ALPHA-SYNUCLEIN ORIGINATES IN THE GUT HAS RECENTLY BEEN PUT FORWARD THE LABRIE LAB PUBLISHED A REVIEW OF THE POSSIBILITY THAT ALPHA-SYNUCLEIN AGGREGATION COULD BE SEEDING BY INGESTION, HIGHLIGHTING CURRENT EVIDENCE FOR THE GUT-TO-BRAIN HYPOTHESIS OF PARKINSON'S DISEASE AND PUTTING THIS IN CONTEXT OF AVAILABLE ROUTES THE GI TRACT ALSO REVIEWED WAS EPIDEMIOLOGICAL EVIDENCE THAT DIETARY FACTORS MAY BE INVOLVED IN PD (KILLINGER AND LABRIE, NPJ PARKINSON'S DISEASE 3 33)

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART IX, COLUMN D	FUNDRAISING EXPENSES AT VARI WERE INCURRED TO SUPPORT THE MISSION OF THE RESEARCH INSTITUTE THROUGH DONOR SOLICITATION, GRANT SOLICITATION AND EXTRAMURAL PROPOSAL PREPARATION

990 Schedule O, Supplemental Information

Return Reference	Explanation
FORM 990, PART X, LINE 33	VARI NET ASSETS ARE CONSIDERED ON A CONSOLIDATED BASIS WITH VAN ANDEL INSTITUTE (VAI)AND VAN ANDEL EDUCATION INSTITUTE (VAEI) ON A CONSOLIDATED BASIS, NET ASSETS ARE \$1,557,030,000 PER AUDITED FINANCIAL STATEMENTS THE NEGATIVE NET ASSET BALANCE AT VARI IS DUE TO VAI FUNDING EXPENSES ON A CASH BASIS AND THE UNREALIZED LOSS RECORDED IN ASSOCIATION WITH THE INTEREST RATE SWAP

SCHEDULE R
(Form 990)

Department of the Treasury
Internal Revenue Service

Related Organizations and Unrelated Partnerships

▶ Complete if the organization answered "Yes" on Form 990, Part IV, line 33, 34, 35b, 36, or 37.

▶ Attach to Form 990.▶ Information about Schedule R (Form 990) and its instructions is at www.irs.gov/form990.

OMB No 1545-0047

2016

Open to Public Inspection

Name of the organization
VAN ANDEL RESEARCH INSTITUTE

Employer identification number
52-2000823

Part I Identification of Disregarded Entities Complete if the organization answered "Yes" on Form 990, Part IV, line 33.					
(a) Name, address, and EIN (if applicable) of disregarded entity	(b) Primary activity	(c) Legal domicile (state or foreign country)	(d) Total income	(e) End-of-year assets	(f) Direct controlling entity
(1) VAI INNOVATIONS LLC 333 BOSTWICK AVENUE NE GRAND RAPIDS, MI 495032518 52-2000823	LICENSING INTELLECTUAL PROPERTY OF VARI	MI	0	0	VAN ANDEL RESEARCH INSTITUTE
(2) BOSTWICK EVENT MANAGEMENT 333 BOSTWICK AVENUE NE GRAND RAPIDS, MI 495032518 52-2000823	EVENT MANAGEMENT	MI	33,591	119,044	VAN ANDEL RESEARCH INSTITUTE

Part II Identification of Related Tax-Exempt Organizations Complete if the organization answered "Yes" on Form 990, Part IV, line 34 because it had one or more related tax-exempt organizations during the tax year.							
(a) Name, address, and EIN of related organization	(b) Primary activity	(c) Legal domicile (state or foreign country)	(d) Exempt Code section	(e) Public charity status (if section 501(c)(3))	(f) Direct controlling entity	(g) Section 512(b)(13) controlled entity?	
						Yes	No
(1) VAN ANDEL INSTITUTE 333 BOSTWICK AVENUE NE GRAND RAPIDS, MI 495032518 52-2000820	SUPPORTING ORGANIZATION FOR VARI AND VAEI	MI	501(C)(3)	12C	N/A		No
(2) VAN ANDEL EDUCATION INSTITUTE 333 BOSTWICK AVENUE NE GRAND RAPIDS, MI 495032518 52-2000824	OPERATING A SCIENCE EDUCATION PROGRAM	MI	501(C)(3)	2	VAN ANDEL INSTITUTE	Yes	
(3) VAN ANDEL INSTITUTE GRADUATE SCHOOL 333 BOSTWICK AVENUE NE GRAND RAPIDS, ME 495032518 20-3340886	OPERATING A GRADUATE SCHOOL	MI	501(C)(3)	2	VAN ANDEL EDUCATION INSTITUTE	Yes	

Part III Identification of Related Organizations Taxable as a Partnership Complete if the organization answered "Yes" on Form 990, Part IV, line 34 because it had one or more related organizations treated as a partnership during the tax year.

(a) Name, address, and EIN of related organization	(b) Primary activity	(c) Legal domicile (state or foreign country)	(d) Direct controlling entity	(e) Predominant income(related, unrelated, excluded from tax under sections 512- 514)	(f) Share of total income	(g) Share of end-of-year assets	(h) Disproportionate allocations?		(i) Code V-UBI amount in box 20 of Schedule K-1 (Form 1065)	(j) General or managing partner?		(k) Percentage ownership
							Yes	No		Yes	No	

Part IV Identification of Related Organizations Taxable as a Corporation or Trust Complete if the organization answered "Yes" on Form 990, Part IV, line 34 because it had one or more related organizations treated as a corporation or trust during the tax year.

(a) Name, address, and EIN of related organization	(b) Primary activity	(c) Legal domicile (state or foreign country)	(d) Direct controlling entity	(e) Type of entity (C corp, S corp, or trust)	(f) Share of total income	(g) Share of end-of- year assets	(h) Percentage ownership	(i) Section 512(b) (13) controlled entity?	
								Yes	No

Part V Transactions With Related Organizations Complete if the organization answered "Yes" on Form 990, Part IV, line 34, 35b, or 36.

Note. Complete line 1 if any entity is listed in Parts II, III, or IV of this schedule

1 During the tax year, did the organization engage in any of the following transactions with one or more related organizations listed in Parts II-IV?

a Receipt of **(i)** interest, **(ii)** annuities, **(iii)** royalties, or **(iv)** rent from a controlled entity

b Gift, grant, or capital contribution to related organization(s)

c Gift, grant, or capital contribution from related organization(s)

d Loans or loan guarantees to or for related organization(s)

e Loans or loan guarantees by related organization(s)

f Dividends from related organization(s)

g Sale of assets to related organization(s)

h Purchase of assets from related organization(s)

i Exchange of assets with related organization(s)

j Lease of facilities, equipment, or other assets to related organization(s)

k Lease of facilities, equipment, or other assets from related organization(s)

l Performance of services or membership or fundraising solicitations for related organization(s)

m Performance of services or membership or fundraising solicitations by related organization(s)

n Sharing of facilities, equipment, mailing lists, or other assets with related organization(s)

o Sharing of paid employees with related organization(s)

p Reimbursement paid to related organization(s) for expenses

q Reimbursement paid by related organization(s) for expenses

r Other transfer of cash or property to related organization(s)

s Other transfer of cash or property from related organization(s)

Yes

No

1a

No

1b

No

1c

Yes

1d

No

1e

Yes

1f

No

1g

No

1h

No

1i

No

1j

No

1k

No

1l

No

1m

No

1n

Yes

1o

Yes

1p

Yes

1q

Yes

1r

No

1s

No

2 If the answer to any of the above is "Yes," see the instructions for information on who must complete this line, including covered relationships and transaction thresholds

See Additional Data Table

(a) Name of related organization	(b) Transaction type (a-s)	(c) Amount involved	(d) Method of determining amount involved

Schedule R (Form 990) 2016

Provide the following information for each entity taxed as a partnership through which the organization conducted more than five percent of its activities (measured by total assets or gross revenue) that was not a related organization. See instructions regarding exclusion for certain investment partnerships.

[illegible]

Part VII **Supplemental Information**

Provide additional information for responses to questions on Schedule R (see instructions)

Additional Data

Software ID:
Software Version:
EIN: 52-2000823
Name: VAN ANDEL RESEARCH INSTITUTE

Form 990, Schedule R, Part V - Transactions With Related Organizations

(a) Name of related organization		(b) Transaction type(a-s)	(c) Amount Involved	(d) Method of determining amount involved
(1)	VAN ANDEL INSTITUTE	C	45,881,651	ACTUAL AMOUNT PAID
(1)	VAN ANDEL INSTITUTE	E	37,840,000	TOTAL RECORDED
(2)	VAN ANDEL INSTITUTE	N	294,412	ALLOCATION BASED ON SQ FOOTAGE
(3)	VAN ANDEL INSTITUTE	P	1,274,449	ACTUAL AMOUNT PAID
(4)	VAN ANDEL INSTITUTE	N	158,388	ALLOCATION BASED ON EFFORT
(5)	VAN ANDEL INSTITUTE	O	1,198,029	ALLOCATION BASED ON EFFORT
(6)	VAN ANDEL EDUCATION INSTITUTE	P	171,373	ACTUAL AMOUNT PAID
(7)	VAN ANDEL EDUCATION INSTITUTE	Q	1,110,235	ACTUAL AMOUNT RECEIVED
(8)	VAN ANDEL EDUCATION INSTITUTE	N	39,967	ALLOCATION BASED ON EFFORT
(9)	VAN ANDEL EDUCATION INSTITUTE	O	302,306	ALLOCATION BASED ON EFFORT
(10)	VAN ANDEL INSTITUTE GRADUATE SCHOOL	O	79,093	APPORTIONED FY17 COMPENSATION
(11)	VAN ANDEL INSTITUTE GRADUATE SCHOOL	N	19,243	ALLOCATION BASED ON EFFORT
(12)	VAN ANDEL INSTITUTE GRADUATE SCHOOL	N	165,607	ALLOCATION BASED ON SQ FOOTAGE
(13)	VAN ANDEL INSTITUTE GRADUATE SCHOOL	Q	223,711	ACTUAL AMOUNT RECEIVED
(14)	VAN ANDEL INSTITUTE GRADUATE SCHOOL	O	145,555	ALLOCATION BASED ON EFFORT
(15)	VAN ANDEL INSTITUTE	Q	5,604,544	ACTUAL AMOUNT PAID
(16)	VAN ANDEL INSTITUTE	E	7,814,516	TOTAL RECORDED