



Van Andel Institute®  
*Graduate School*

Catalog 2008

FINAL – DECEMBER 14, 2007

# Table of Contents

<b>Introduction</b>	1
<b>Mission</b>	1
<b>Collegial Community</b>	2
<b>Admission</b>	2
<b>Tuition</b>	3
<b>Academic Program</b>	3
Goals	3
Graduation Requirements for the Ph.D. Degree	4
Academic Advisor	4
Course Requirements	5
Laboratory Rotations	6
Selection of Mentor	6
Thesis Proposal	7
Preliminary Exam	7
Thesis Committee Meetings	9
Teaching Opportunities	9
Additional Required Training	10
Other Learning Opportunities	10
Thesis Preparation and Defense	11
Typical Program of Study (Annual Calendar)	12
Graduation Requirements for the M.S. Degree	12
Instruction	13
Evaluation	13
Academic Dishonesty	14
<b>Academic Support</b>	15
Orientation and Registration	15
Academic Record	15
Advisers, Academic and Research	16
Peer Support	16
Library	17
Information Technology	17
Disability Policy	19
<b>Faculty</b>	19
Faculty Committees	21
<b>Legal Status</b>	21
Governance	21
Authorization and Accreditation	22
Compliance with Legal Requirements	22
<b>Amending and Revising This Manual</b>	22
<b>Administration</b>	23
<b>Board of Directors</b>	23



# The Van Andel Institute Graduate School

## Introduction

Jay and Betty Van Andel founded the Van Andel Institute (VAI) in 1996. The Institute moved into its current facilities in Grand Rapids, Michigan, in May 2000. In establishing the Institute, the Van Andels had a vision for an institute with a worldwide impact in enriching and enhancing the lives of this and future generations through medical research and education.

The Van Andel Institute Graduate School is a part of the Van Andel Education Institute (VAEI) and is incorporated in the state of Michigan with authority to grant Ph.D. and M.S. degrees. VAEI and the Van Andel Research Institute (VARI) constitute the Van Andel Institute. Each organization has a trust agreement with the state of Michigan. Each of the three organizations supports the Graduate School. The administrative offices provide finance, information technology, human resource, facilities services, fundraising (through grants and private philanthropy) and public awareness services for the Graduate School. VARI, a biomedical research organization focusing on cancer, has a mission to improve human health. VARI conducts research in molecular biology and genetics to identify and understand the function of genes and their protein products (*functional genomics*) and the ways to apply this knowledge to diagnosis and therapeutics (*translational research*). It provides the facilities and the faculty for the Graduate School. VAEI, the parent organization for the Graduate School, also provides complementary education through a guest student program and programs to enhance teaching and learning in K-12 schools through the use of technology and science education.

The VAI Graduate School brings together the expertise and resources of VARI and VAEI to prepare graduate students for careers in biomedical research.

## Mission

The mission of the VAI Graduate School is to prepare biomedical research scholars through a graduate program in cell and molecular genetics, with emphasis on translation of this knowledge and technology to improve human health and well-being. The graduate program is distinguished in the following ways: 1) emphasis on the application of basic cellular and molecular biology to clinical problems, i.e., from laboratory bench to clinic bedside; 2) exceptional facilities with core technology support; 3) distinguished faculty, and 4) a culture of collaboration.

The educational goals of the Graduate School include general goals common to higher education and the scientific research community and specific goals that will distinguish the VAI graduate program. The graduates will know current biomedical science, its historical context, and clinical medicine related to genetics. They will be prepared to conduct original research: design appropriate experiments, be expert in techniques of the life sciences, and think scientifically and analytically. They will be able to translate basic science to address problems of health and society; work collegially; communicate effectively verbally, in writing, and



graphically; and practice the highest ethical and professional standards. We expect to develop graduates who are creative and confident in exploring new areas and techniques.

## **Collegial Community**

A fundamental concept that shapes the VAI graduate education program is that the preparation of students should closely reflect the work they will do as a professional scientist. Thus, they will be engaged in doing science from their matriculation to graduation from the program. Implementing this concept means the majority of the student's work is as a member of an active research team. The coursework requirements will be appropriate for those who enter the program adequately prepared. Much of the education will be in the laboratory alongside the principal investigator, postdoctoral fellows, and other members of the team.

The concept of "learning while doing" also reflects the view that, at the graduate level, students will work from the specific to the general in developing creative approaches to the solution of specific research problems. The students should come with appropriate preparatory knowledge and be prepared to work in a specific area. Development of research expertise will come from both collegial community interactions and individual initiative as the student broadens her/his study in order to address specific issues.

At VAI, students are part of a purposeful community in which they are challenged to understand the basic sciences of cellular and molecular biology and direct it toward helping others and make this world a better place to live, i.e., to translate the basic scientific knowledge into improvements in the diagnosis and treatment of disease. It is a caring and supportive community that encourages meaningful collaboration within VAI and with outside individuals and institutions. There is a culture of freedom and creativity that encourages individuals to fulfill their roles with excellence within a context of purposeful work, work that serves others and makes this world a better place to live. Students will be challenged to pursue original research with integrity and high ethical standards.

## **Admission**

The graduate program is intended for students seeking a Ph.D. in cell and molecular biology that prepares them for leadership positions in research or clinical laboratories. The VAI Graduate School is interested in matriculating persons with excellent academic preparation and performance, high competence in skills important to scientific work (e.g., writing and critical thinking), and good character. The program is open to all applicants irrespective of race, gender, ethnic or national origin, religion, or age, including international applicants. Up to four students will be admitted each year.

All applicants must have earned a Bachelor of Arts or Science (B.A. or B.S.) degree or equivalent from an accredited college or university prior to enrolling at VAI. The usual preparation is in the natural sciences, with courses in chemistry, biochemistry, biology, physics, and mathematics required. We seek to identify those students with the most promise for superior achievement in our program, using a wholistic review of credentials. Consideration is given for each applicant's overall qualifications, as demonstrated by their academic record and test scores,



research experience, and letters of recommendation. VAI has not established minimum cut-off values for any of the required application materials, but the following criteria will be viewed favorably. Advanced training in cell biology, molecular biology, genetics, and statistics is strongly recommended. A grade point average of 3.5 or better during the last two full years of undergraduate study in courses pertinent to the pursuit of a career in science is also recommended. Applicants with other academic backgrounds may be considered if they perform well on the Graduate Record Examination (GRE) and give appropriate evidence of excellent training, qualifications, and motivation. Applicants judged to have a deficient academic preparation will be required to successfully complete certain courses before enrolling in courses at the VAI Graduate School.

In order to ensure full consideration, applications for admission must be received by January 5 of the year the student will matriculate. The application should include:

- A completed application form;
- Official transcripts of their academic record;
- TOEFL scores, if applicable;
- GRE results from the General Test and one Subject Test (biochemistry, cell and molecular biology; biology; chemistry; physics; or mathematics);
- Three letters of reference, including two from faculty members who know the applicant and the applicant's academic work and, if applicable, who supervised independent study or research;
- A personal statement of purpose indicating area of interest, long-term goals, and any research experience;
- A cover letter stating the applicant's interest in the VAI Graduate School;
- Applicants with the strongest credentials will be interviewed in person, typically during a visit to VAI.

## **Tuition**

The tuition for a full academic year (2007-08) and subsequent summer (2008) is \$25,000. The tuition rate is based on a full year of 32 to 36 credits. If fewer credits are taken, the tuition will be prorated. Tuition will be waived for students supported by VAI-GS fellowships.

## **Academic Program**

### Goals

The goal of the academic program is to prepare persons who will make original contributions to our understanding of cell and molecular biology, as well as to the translation of basic science to clinical situations. This dual purpose will be reflected in the education students receive as basic science and pathobiology are integrated in the various courses.

The educational goals of the program are those general goals of higher education and scientific research community as well as the specific goals that distinguish the VAI graduate program. Graduates of the program will:





DNA, and protein), gene splicing and rearrangement, tumor viruses, and suppressor genes. In addition to exams, students are required to complete a case study report.

Molecular Biology and Clinical Practice 1 sem. 2 hours

The goal of this course is to provide students with a framework for understanding clinical medicine. The course lectures and readings provide an overview of clinical medicine, the requirements of clinical laboratories, and clinical trials. The students are expected to attend clinical discussion groups and grand rounds at Spectrum Hospital and also participate in discussions with patient advocacy groups. Students are required to submit a case study report.

Responsible and Effective Conduct of Research 1 sem. 1 hour

The goal of this course is to instill in the students a sense of ethic principles for working within the scientific research environment. This course will provide training and direction on how to recognize, address, and prevent ethical dilemmas that arise during the course of conducting scientific research. Specific areas to be addressed include protection of human subjects, use and welfare of animals, conflicts of interest, intellectual property, peer review, authorship, collaborations, mentoring, data management and research misconduct.

Laboratory rotations 3 rotations 9 hours

See description below

Special Topics Courses 3 semesters 6 hours

These courses provide advanced study on a focused topic in basic or clinical research and are typically taken in years 2-4 of the graduate program. The purpose of the course is to engage students in the study and discussion of the current literature and concepts of the topic selected. The topics vary and usually reflect the particular interests of the faculty member who leads the course.

Journal Club 8 sems. 8 hours

An institute-wide weekly discussion of current research articles. The purpose is for students to become familiar with the literature and develop competence in critical analysis of research. Each student is required to give one presentation each semester and to complete an evaluation form for each journal club meeting.

Research in Progress 8 sems. 8 hours

A weekly institute-wide seminar on current work at VARI. Students are required to attend and complete an evaluation form after each presentation. Once students select a thesis mentor, they will present their work in this forum annually.

Han-Mo Koo Seminars 8 sems. 8 hours

This seminar series offers invited research presentations by scientists external to VARI, typically weekly. Students will attend a session prior to the seminar to discuss the historical context of the seminar topic. Following the seminar, students are required to submit a brief written reflection and evaluation on the seminar.

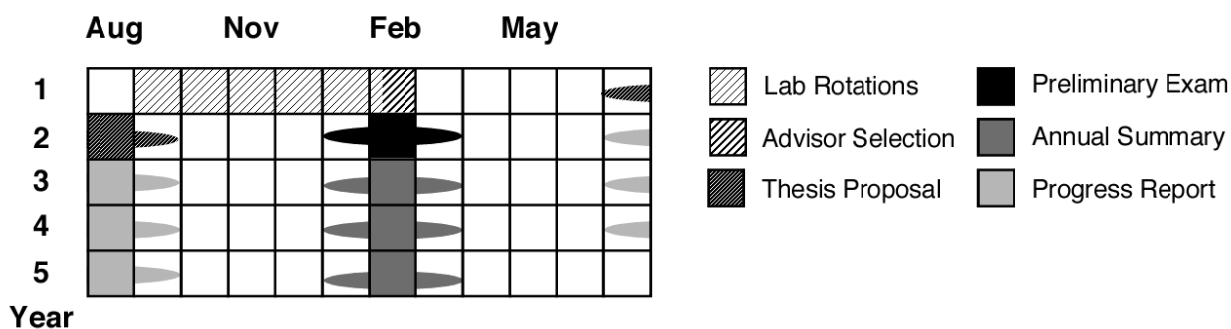


Class listings with course numbers, class schedule, and the academic calendar can be found in the Appendix.

### 3. Laboratory Rotations

As part of the orientation for incoming students, faculty who wish to participate will present their research interests to the assembled incoming graduate students. During orientation, students are encouraged to visit the laboratories and become acquainted with the faculty and their research interests. During the orientation period, students will arrange one to three laboratory rotations. Each rotation is approximately eight (8) weeks, with the first rotation beginning in early September and the last rotation concluding in late February (see Graduate Milestones Calendar). The rotations serve to familiarize the student with the research focus of various laboratories, including approaches and methodologies used by different research groups. These experiences also assist students in their choice of a thesis advisor. The specific activities in each rotation may vary among laboratories; the research projects and expectations should be defined at the outset by the laboratory head. Because of the importance of early laboratory experience in the development of the student, we encourage first-year students to spend as much time in the laboratory as their course work will allow. Following each rotation, students will summarize their findings and detail future directions for the rotation project by writing a five page rotation research report. Copies of this report shall be provided to the rotation mentor and to the graduate school office.

### Graduate Milestones Calendar



### 4. Selection of Mentor

Any faculty member in the Van Andel Research Institute may serve as a research mentor and thesis advisor. The laboratory should be engaged in research that is of specific interest to the student and should have an atmosphere that is conducive to the development and training of the student. The relationship between the graduate student and thesis advisor is central for a successful research project, the intellectual development of the student, and completion of the degree. With this in mind, the student and mentor should strive to create a productive and enjoyable research environment with suitable rapport. The laboratory must have sufficient financial support and physical space for the student's research. The student may request assistance from the Academic Advisor in selecting a laboratory, particularly if difficulties in selecting a mentor are encountered. Although mentor selections are typically made after all three lab rotations have been completed, selections may be made after the second rotation period (i.e., in December of the first semester). After a mutual agreement is reached between a student and



the faculty member, the student must immediately notify the Graduate Program Dean in writing for approval and assignment.

#### 5. Thesis Proposal and Thesis Advisory Committee

Assignment of Committee: Following selection of a thesis advisor, each student together with their research advisor will examine topics for the thesis research, begin gathering data, and write a Thesis Proposal following the guidelines of the Graduate School. Construction of the Thesis Proposal will occur in the six months following selection of a thesis advisor (see Graduate Milestones Calendar). After consulting with the thesis adviser and student, the Dean will appoint a Thesis Advisory Committee near the end of the first year of study. The Thesis Advisory Committee should consist of four members selected by the student in consultation with the mentor, and must include (i) the student's thesis advisor, (ii) two additional Van Andel Institute Graduate Program faculty, and (iii) one outside faculty member other than Van Andel Institute faculty.

Student's Responsibilities: At the end of the first year (i.e., six months after selecting the thesis advisor), the student must submit a written Thesis Proposal of her/his research to members of the Thesis Advisory Committee. The student shall meet with the committee, present a formal oral presentation of the Thesis Proposal and with the committee discuss and refine the proposal. With the help of the committee the student will outline a set of research objectives that will be expected to be met in the next year. The proposal will be the basis of the Preliminary Exam. The proposal must be submitted to the committee members at least 1 week prior the Thesis Advisory Committee meeting.

Committee's Responsibilities: The committee will review the initial Thesis Proposal and evaluate progress toward the degree on a semi-annual basis. Evaluation of progress will be based on the outcomes of the Progress Report and Annual Summary meetings. Committee members will provide guidance and advice in addition to that given by the research mentor. At each meeting the committee will help the student establish a set of objectives to be met before the next meeting.

#### 6. Preliminary Exam

The goal of the Preliminary Exam is to evaluate the student's potential and ability to identify and define explicitly a specific testable hypothesis. This will be based on evaluating the relevant literature; drafting a testable and important hypothesis; proposing critical experiments to rule out or prove the hypothesis; and interpreting the experimental outcome. The students will also be expected to demonstrate their knowledge of basic concepts as well as current and relevant scientific literature.

The Preliminary Exam Committee will consist of the Academic Advisor, one VARI faculty member from the student's Thesis Advisory Committee, one VARI faculty member not on the thesis committee, and one outside expert on the non-thesis proposal topic. The latter two members will be appointed by the Graduate School Dean with advice from the thesis advisory committee. Students must take the Preliminary Examination prior to Feb 15<sup>th</sup> of their second year of study.



The examination will comprise three parts. The first component is a written thesis research proposal prepared in the style of a National Institutes of Health (NIH) grant application complete with Abstract, Specific Aims, Background/Introduction, and Research Design and Methods sections. After lab rotations, students are encouraged to work closely with their thesis advisor to develop specific aims and begin generating preliminary data to support their Preliminary Exam thesis proposal. The written proposal (exclusive of references and figures) should not exceed 20 pages, double-spaced, 12 point font, with 1 inch margins. The students are required submit their Preliminary Exam thesis proposals to their Preliminary Exam Committee two weeks prior to the scheduled preliminary oral exam date and no later than Feb 1<sup>st</sup>.

The second part consists of a research proposal on a topic in an area different than the student's chosen field of research. A student will first propose a non-thesis Preliminary Exam topic by writing a brief 1 page description in November of the second year. This topic submission must clearly state the hypothesis to be addressed in the proposal and briefly describe the experimental systems proposed to test the hypothesis. This topic selection must be approved by a VAI faculty member. After approval of the submitted research proposal (December), the student shall write the full non-thesis proposal. The non-thesis proposal is due two weeks prior to the scheduled preliminary oral exam date and no later than Feb 1<sup>st</sup>. The scope of the project should be such that it could be realistically carried out by a single person with only part-time technical help in three years. The written proposal should not exceed 10 pages, double-spaced.

The Preliminary Examination should represent the student's individual efforts and abilities. During the preparation of the proposal students are encouraged to consult with other students, postdoctoral fellows, and faculty for clarification of ideas. Students should not solicit suggestions for the proposal's specific aims nor should they ask anyone else to provide the specific experimental design. The thesis advisor should not directly participate in the writing or the preparation of either the written or oral exam, but may and should offer instruction or advice on proposal planning and writing in general terms.

After the two written portions of the Preliminary Exam have been submitted, the third phase involves an oral defense of the two written proposals together with an examination on related topics. The oral exam is a 2-hour "chalk talk" defense of the written proposals administered by the same thesis faculty from the written exam. At the discretion of the committee, the student will be asked to leave the room for deliberations at the beginning and end of the exam.

Passing the preliminary examination requires satisfactory completion of all three of the component parts. The committee will decide upon one of three possible outcomes:

- a) Pass. - No further work is required on the Preliminary Examination itself. The committee may make recommendations for areas in which improvement should be sought or expected.
- b) Failure with opportunity to remediate. – If the preliminary exam committee identifies weaknesses in a limited number of areas and believes that these deficiencies can be corrected with specific actions, the student may be offered the opportunity to remediate those portions of the examination. The committee will define explicitly the conditions



for remediation. The remediation should be completed within three months of the initial examination date. In the remediation efforts are deemed satisfactory, the student will have passed the preliminary exam. If the remediation efforts are deemed unsatisfactory, the student will have failed the preliminary exam and the student will be asked to leave the doctoral program.

c) Failure. – If the student fails one or more portions of the preliminary examination, with deficiencies beyond the scope deemed remediable within three months, the student will not be offered the opportunity to remediate and the student will be asked to leave the doctoral program.

Upon successful completion of both the written and oral exams, the student spends full time in the laboratory on their thesis project. The predoctoral grant application must be submitted to an external agency to be considered for funding (typically as a predoctoral fellowship) within one year.

#### 7. Thesis Committee Meetings - Annual Summary and Progress Report

To monitor and support student progress towards completion of their degree, students will meet with their thesis advisory committees every six months using two types of meetings termed Annual Summary and Progress Report meetings. The specific dates for these meetings will be coordinated by the VAI Graduate School office.

The Annual Summary meetings will be convened on or before each anniversary date of the Preliminary Exam, with the first meeting to take place one year after completion of the Preliminary Exam. For these meetings, the student must submit a written Annual Summary of her/his research to the Thesis Advisory committee. The Annual Summary should be prepared in the style of a formal scientific report. The Annual Summary must be submitted to the committee members at least one week prior to the Thesis Advisory Committee meeting. The student shall present a formal oral presentation of the Annual Summary. The committee, after review and discussion, will advise the student on her/his progress toward fulfilling the requirements of the program. These meetings shall be held annually until the thesis defense is scheduled (see Graduate Milestones Calendar).

Progress Report meetings will be convened before the end of each academic year, with the first such meeting to take place approximately six months after successful completion of the Preliminary Exam. For these meetings, the student will submit to the committee a 1-2 page report outlining the progress that has been made towards achieving the objectives established at prior committee meetings (see Graduate Milestones Calendar). The Progress Report must be submitted to the committee members at least 1 week prior to the Thesis Advisory Committee meeting. During Progress Report meetings, the student shall meet informally with the committee to discuss his/her progress. If adequate progress towards the objectives has been met, a new set of objectives for the next year will be established. If the committee finds inadequate progress has been made, they will provide guidance and advice on how to best proceed and a new set of objectives outlined.

#### 8. Teaching Opportunities



Opportunities are available for giving lectures and/or teaching classes or laboratories outside of the Van Andel Institute. Interested students should discuss these opportunities with their prospective mentors during laboratory rotations. The Graduate School has established no formal requirement to participate in outside teaching opportunities. However, the graduate school and/or a graduate student's mentor reserve the right to institute such a requirement. Whether or not a student will utilize these opportunities will be decided on a case by case basis by mutual agreement of the student and mentor, with final approval by the Graduate Dean.

#### 9. Additional Required Training

##### a.) Chemical Safety/Biosafety/Radiation Safety

All new students will be required to complete basic chemical, biological, and radiation safety training during the first orientation week. This training is required before any student can work in a laboratory.

##### b.) Responsible Conduct of Research

All students will be required in their first or second year to attend workshops or courses on the responsible conduct of research and to pass a written exam on the ethical standards of research.

##### c.) Community Service

All students will be required to give a minimum of 4 hours of community service to VAI during their time in the program. This can take the form of assisting in the VAI education program, service at a local school, hospital, or other medical-related facility, or working at an institutional-sponsored event.

##### d.) Grand Rounds

The VAI graduate school emphasizes translational research. To facilitate the understanding of how to bring ideas from the lab to the clinic, all students will be required to attend Grand Rounds or an equivalent experience once a week for 6 months at a local hospital.

##### e.) Oral Presentations

Beginning in their second year, all students will be required to make two oral presentations to the VAI community each year. One will be a progress report on their research project and the second will be presentation of a selected journal article from the current literature. Students will be given training on presentation skills prior to their presentations and be evaluated by the VAI community.

##### f.) Poster Presentations

Beginning in their second year, all students will be required to present a poster every year at the annual VAI retreat.

##### g.) Attendance at scientific meetings

All students will annually attend a national scientific meeting. Advanced students (third year and beyond) are expected to present a poster of their work at the meeting. The Graduate School will financially support attendance at one meeting per student per year.

#### 10. Other Learning Opportunities

##### a.) Host a student-sponsored speaker

The graduate students as a group will have the opportunity each year to invite, host, and interact with an outside seminar speaker of their choice. In addition, students have an



opportunity each week to attend a postdoctoral fellow-sponsored luncheon with an outside seminar speaker hosted by VAI.

b.) Career Development

Several workshops and seminars a year sponsored by VAI or the office of postdoctoral affairs will be presented on career options and the development of skill sets required for successful scientists. These include manuscript writing, grant writing, lab management, manuscript and grant reviewing, conflict resolution, and speakers from various fields of science.

c.) Membership in a scientific society

All students will be encouraged to join a scientific society of their choice.

## 11. Thesis Preparation and Defense

Students are required to prepare a detailed written thesis (also known as a dissertation) conforming to VAI Graduate School requirements as outlined in the Thesis Preparation Manual. Prior to preparing the thesis, each graduate student must meet with their Thesis Advisory Committee to discuss future career plans and obtain permission to begin writing the thesis. At this time, a Thesis Defense Committee must be formed to evaluate the graduate student's doctoral thesis. The committee will consist of all members of the Thesis Advisory Committee except for the committee chairperson (the mentor). In lieu of the chairperson, an outside investigator with expertise in the student's field of study will be appointed. The completed written thesis must be delivered to all members of the Thesis Advisory Committee and the Thesis Defense Committee at least 2 weeks prior to the scheduled defense date. The thesis defense will consist of an oral presentation and an oral examination. The oral presentation will serve as the public defense and will be open to all that wish to attend. The student will prepare and deliver a 40-45 minute presentation of his or her research project and then field questions from the audience. The Thesis Defense Committee will evaluate the student's performance during this presentation. The oral presentation will be followed by the oral examination. The oral examination will be administered by the Thesis Defense Committee and will be closed to the public. The Thesis Advisory Committee chairperson (the mentor) may attend this examination, but the mentor is not allowed to participate in the examination. Throughout the defense, the Thesis Defense Committee may decide to require additional refinement to the written thesis. Any such requirements must be completed to be granted a Ph.D. degree. Upon completion of the oral presentation and oral exam, the Thesis Defense Committee will make a recommendation to the Dean of the Graduate school of whether or not to grant the Ph.D. degree.

The thesis submitted for the Ph.D. degree must be based on original research that makes a significant contribution to our understanding of cellular, molecular, or genetic biology relevant to human disease. The design, execution and presentation of the thesis research must demonstrate that the candidate can perform independent research of a quality consistent with that published in refereed journals of the relevant disciplines. In most circumstances, it is expected that substantial portions of the thesis research will have been published or submitted for publication. The thesis and the oral defense should provide clear evidence of the candidate's capacity to function as a professional scientist, including broad knowledge of the research topic; ability to draft hypotheses and design effective tests of those hypotheses; ability to execute experiments accurately; ability to interpret results critically; and ability to communicate the research project effectively.



## Typical Program of Study (Annual Calendar)

### First year

- First semester (September to mid December – 14 weeks)
  - Strategic Approaches to Biomedical Research Problems (9 credits)
  - Historical Perspectives in Molecular Biology (2 credits)
  - Laboratory rotations (2 credits)
  - Research in Progress (1 credit)
  - Journal Club (1 credit)
  - Han-Mo Koo Seminars (1 credit)
- Second semester (January to April, 14 weeks)
  - Strategic Approaches to Biomedical Research Problems (9 credits)
  - Molecular Biology and Clinical Practice (2 credits)
  - Responsible Conduct of Research (1 credit)
  - Laboratory rotations (1 credit)
  - Research in Progress (1 credit)
  - Journal Club (1 credit)
  - Han-Mo Koo Seminars (1 credit)
- Normally the student will select a Research Adviser midway through the second semester.

### Second year

- Thesis research
- Preliminary Examination (February)
- Journal Club
- Seminar
- Research in Progress
- Special topics course(s)

### Third and fourth year

- Thesis research
- Teaching experience, if desired
- Annual meetings with thesis advisory committee
- Special topics courses
- Journal Club
- Seminar
- Research in Progress

### Fifth year

- Thesis research
- Thesis preparation
- Thesis defense

Students enrolled in the program are expected to complete the requirements for the Ph.D. degree within five years.

## Graduation Requirements for the M.S. Degree



Students whose primary objective is to obtain the M.S. degree will not be accepted into the graduate program. However, students who choose to discontinue the Ph.D. program will be awarded the M.S. degree if they have completed the course work defined above (except that the requirements for Special Topics courses will be waived, and only four credits each for the Journal Club, Research in Progress, and external seminar courses will be required) AND have passed the preliminary examination.

### Instruction

The students in the Van Andel Institute Graduate School are part of the research community both at the Institute and beyond. The faculty and students are together engaged in research and study. The students actively learn the characteristic tasks of investigators: experimental design, problem-solving, literature review, critical analysis, technique development, and laboratory research. The instruction format includes lectures, seminars, discussions, laboratory rotations, clinical rotations, and research, all of which are led by the faculty. The faculty members advise, support, evaluate, and encourage the students.

As members of the learning community at the Van Andel Institute, students are required to attend scheduled class sessions and credit seminars. Students are expected to contribute to the classes and seminars as well as learn from other students.

It is expected that students will complete their degrees in 5 years and every effort will be made to make sure students are on track. Failure to make sufficient progress in the program are grounds for dismissal. Extension beyond 5 years will be allowed if the Graduate Dean determines there are extenuating circumstances (comparable to those defined for employees under the Family Leave Act). Rarely will there be an extension beyond 6 years.

Foreign students must demonstrate fluency in oral and written English as demonstrated by satisfactory performance in courses, seminars and scientific writing. Failure to achieve fluency by the end of the second year will result in dismissal from the graduate program.

### Evaluation

Student work is evaluated for progress toward fulfilling the goals of the graduate program and also to assist the student in measuring progress toward fulfilling the graduation requirements. The faculty expects the students to make satisfactory progress and will assist them toward that goal. Satisfactory progress includes passing all courses and completing the graduation requirements on a schedule that aims toward completion of all requirements for the degree within five years. Each student will be provided with a Student Progress Checklist to track their progress through the program. Students will be evaluated in the following ways:

1. Courses: The instructors evaluate student performance in courses, provide written evaluation of the work, and assess students on a 4.0 GPA grade scale. A GPA score of 3.0 or better is considered a passing grade. A GPA score that falls to 2.5 or below will be considered a failing grade. Two failing grades in the graduate program are grounds for dismissal.



2. Rotations: Following each laboratory rotation, students will summarize their findings and suggest further directions for the rotation project by writing an approximately five page report.
3. Preliminary exam: The preliminary exam shall be completed before February 15 of the second year. The format and potential outcomes for the Preliminary Exam are defined in a prior section of this catalog.
4. Annual research reports: The student must submit a Progress Report 6 months after successfully completing the Preliminary Exam and annually thereafter, at the end of each academic year, until the Thesis Defense is scheduled. In addition, the student must submit a written Annual Summary, in the style of a formal scientific report, of her/his research to members of the Thesis Advisory committee within one year of completion of the Preliminary Exam and annually thereafter until the Thesis Defense is scheduled. All written reports must be submitted to the committee members at least 1 week prior the Thesis Advisory Committee meeting. The student shall meet with the committee semi-annually to discuss results and define future directions and objectives based on the Progress Report and the Annual Summary. These meetings shall continue until the thesis defense is scheduled. The committee, after review and discussion of the Progress Report and the Annual Summary, will advise the student on her/his progress toward fulfilling the requirements of the program. In addition, the student will complete the Graduate Student Evaluation Form each semester in collaboration with their Academic Advisor.
5. Thesis Defense: Students are required to make a public presentation of their research results and thesis and also successfully defend the thesis before the thesis defense committee. The process for the thesis defense is detailed in a prior section of this catalog.

When students are not making adequate process toward completion of courses or graduation requirements as determined by their Academic Adviser and the Graduate Dean, they may be placed on academic probation. Students are given written notification of probation and written guidelines for removal of the probationary status. Should a student desire to withdraw from the program or take a leave of absence, it is arranged in consultation with the Academic Adviser and Graduate Dean. At the time of approval of the withdrawal or leave of absence, the student will be advised regarding the criteria for reinstatement.

### Academic Dishonesty

Scientific work requires honesty and integrity, and the scientific community has strict standards for the conduct of research. The graduate students are covered by the VARI policy on scientific misconduct, which extends to research and coursework. Students will be asked to read and sign an Honor Code contract governing academic honesty and behavior at VARI. Academic dishonesty in coursework or in fulfillment of other requirements will result in failure on that specific requirement and is grounds for dismissal from the graduate program.



## **Academic Support**

The Van Andel Graduate School directors, faculty, and administrators know that the quality of a program is directly related to the quality of the students. For that reason there will be efforts to recruit talented persons and provide an excellent support for the students when they are enrolled. The Institute has a supportive culture expressed in the collaboration among investigators and students. The students will be considered full participants in the life of the Institute, contributing both to the present and shaping the future of the Institute. As such, they will be expected to uphold the policies and values of the Institute as do the investigators and others.

### Orientation and Registration

New students begin the academic year with an orientation scheduled the week prior to the start of the semester. Before this orientation, the Graduate School must have received final official transcripts from all prior academic work confirming that the course of study was completed and the degree was awarded.

The new student orientation includes an introduction to the research community at the Van Andel Institute, the general requirements of the Van Andel Institute, and the academic policies and procedures of the Graduate School. Official enrollment and registration is also done at this time. The orientation to the general requirements and policies of the Van Andel Institute is done by the Human Resources, Safety, Security, Information Technology, and Research Administration Departments. The topics include, but are not limited to, the following policies: safety and security, drug-free workplace, harassment and sexual harassment, confidentiality and intellectual property, workplace violence, information technology, scientific misconduct, animal use policies, and conflict of interest. (Van Andel Institute policies are available at <http://vainet/>.) The Graduate Dean presents the academic policies and procedures, provides an overview of the requirements for the Ph.D. degree, and discusses the benchmarks for good progress toward fulfilling the requirements.

During the week prior to the start of the Fall semester, students continuing in the Ph.D. program are required to meet with their academic adviser to review their academic progress and the expectations for the new academic year, and also to complete registration forms for the new semester.

### Academic Records

The official academic records and transcripts for graduate students are kept in the office of the Graduate Dean. Course evaluation reports and reports of fulfillment of graduation requirements will be part of the student academic record. Students are responsible for reporting changes in personal information (name, address, etc.) to the Graduate Dean's office and Human Resources. The academic record is a permanent record and not subject to change except by the Graduate Dean.



The Van Andel Institute Graduate School makes the record available to the student electronically. It is also available to the academic and research advisers for use in counseling the student. The School will furnish an official academic transcript upon the written request or approval of the student.

The Graduate School complies with the Family Educational Rights and Privacy Act (FERPA), which assures the student the right 1) to inspect and review his/her education records, 2) to amend parts of the student's education record that are shown to be inaccurate, 3) to consent to all disclosure of personally identifiable information in the record except that which is authorized for school officials with legitimate educational interests, 4) to review letters of recommendation written for the student's file unless the student has signed a waiver, and 5) to file a complaint to the U.S. Department of Education concerning alleged failures of the Graduate School to comply with requirements of FERPA. The Act also permits the Graduate School to release certain information upon request under the guidelines of FERPA. The text of FERPA is available at [www.ed.gov./policy/gen/guid/fpco/ferpa](http://www.ed.gov./policy/gen/guid/fpco/ferpa).

### Advisers, Academic and Research

A congenial and respectful student relationship with the faculty is vital to the hospitality of the graduate school and the continuing development of the student as a research scientist. In order to ensure that students' goals are achieved (as well as those of the Institute), students will be guided in their work by an academic and research adviser.

While the students will become acquainted with the entire faculty, the formal responsibility of advising the students resides with the designated advisors. Students will be assigned an academic adviser during orientation. This adviser will be an intellectual mentor who advises the student regarding academic work and progress toward fulfilling the requirements, serves as a liaison between the student and the faculty and administration, recommends the student for a degree, and is a colleague in the life of the Institute.

The research adviser is selected at the end of the first year following completion of three laboratory rotations. The research adviser guides the student in her/his research from thesis proposal to thesis defense.

In addition to the appointed advisers, the Human Resources office provides resources for personal counseling: psychological, medical, and legal.

### Peer Support

Students have many opportunities to interact and form relationships with one another and the faculty through courses, seminars, informal discussions, social events, and personal friendship, all of which contribute to the desired collegiality. The collegiality among graduate students provides support for the students and also provides a resource of advice for the Graduate School faculty and administration.



## Library

The Hope Library of the Van Andel Institute holds subscriptions to a number of core journals in cancer biology, biochemistry, genetics, cell biology, and molecular biology. In many cases, the electronic-only edition of these publications is obtained to facilitate currency and accessibility, as well as to conserve space.

The Van Andel Institute also contracts with Grand Valley State University (GVSU) for library services. This agreement provides VAI with a medical librarian, access to GVSU's print and electronic book and journal collection, and access to GVSU's licensed databases. Interlibrary loan through OCLC and DOCLINE is also facilitated through GVSU.

VARI researchers can also be granted access to the holdings of the Spectrum Health medical library that is located immediately across the street from the Institute.

## Information Technology

The Van Andel Institute provides a computing infrastructure to support teaching, learning, and research. Graduate students will be provided with a laptop computer, office productivity tools (e.g., Microsoft Suite of applications), an e-mail account, personal file storage area (up to 2 GB), local printing services, and a building-wide wireless network. The VAI Information Technology Department is responsible for supporting and providing services to the entire institute and has policies that protect the IT infrastructure. Failure to follow the IT policies can result in disciplinary action.

## **Student Services**

### Financial Assistance

Applications for regular admission to the graduate school include application for financial assistance. Students who are accepted into the graduate program and do not have an external fellowship receive a fellowship from the Graduate School that is competitive with those of regional universities. The Graduate School fellowship includes a stipend for living expenses, health and life insurance, and a tuition waiver. The Graduate School fellowships will be conferred for for five years. The thesis advisor will be responsible for continuing financial support beyond the fifth year; potential sources include external fellowships or the thesis adviser's research funds. Continuing financial support is assured if the student is making satisfactory progress and fully engaged in graduate work.

### Benefits

Students who are enrolled in the Ph.D. program and who are recipients of a Graduate School fellowship or comparable support will participate in a VAI insurance health plan and a life insurance plan, which are administered through the Human Resources Office. Students may



opt out of the VAI health insurance plan if they demonstrate to HR staff that the student is adequately covered by other insurance plans. Students receive no payment in lieu of participation in the health insurance program.

### Immigration

For the 2008-2009 academic year, the Van Andel Institute Graduate School is only able to accept applications from domestic students (U.S. citizens or permanent residents) due to visa rules. The Van Andel Institute Graduate School expects to be able to accept international applications in the future.

### Facilities

The Van Andel Institute Graduate School is located in the Van Andel Institute, an exceptional facility that is exceedingly well equipped. The research space fosters collegiality, and core technology laboratories provide exceptional support for research. Space is available for study and socializing.

### Housing

The Graduate School does not provide housing for the graduate students. However, information on housing options is available through the Human Resources office.

### Personal Support

The Human Resources office provides resources and/or advice on community resources for personal issues, e.g., child care, fitness, physical health, and legal services.

### Outside Employment and Concurrent Degrees

Doctoral students in the VAI Graduate School are presumed to be devoting their full professional effort towards the pursuit of the Ph.D. Therefore, outside employment or concurrent pursuit of other degrees may be undertaken only with explicit permission from the thesis advisor and the Graduate Dean.

### Student Grievances

Student grievances regarding coursework, grading, academic progress, and VAI Graduate School policies or practices should be directed to the Academic Adviser if they cannot be resolved directly with the person responsible. If the grievance is not resolved, the student should consult the Ombudsman, who will advise the student and serve as a liaison with the faculty and administration. Unresolved issues or appeals should be presented to the Graduate Dean in writing.



Grievances regarding research should first be directed to the research adviser. Should further resolution be necessary, the student can appeal to the thesis committee and the Graduate Dean.

Students who experience sexual harassment, racial or ethnic discrimination, or scientific misconduct are expected to follow the VAI employment policies and procedures.

### Vacation and Personal Time

Graduate students are entitled to 20 days of vacation and / or personal time each year, in addition to the official holidays announced by the Institute. Students should schedule vacations in consultation with their supervisor. Students should also report days taken as personal time off to their supervisor. Unused vacation / PTO days are not carried over into the subsequent year.

### Disability Policy

Students who are unable to continue in their educational and research activities due to illness, personal condition or injury will continue to receive their stipend and benefits for up to thirteen weeks of absence. After an absence of one week, a written medical certificate may be required to verify that any continuing condition prevents a return to normal student activities. The Institute retains the right to request third-party review or confirmation, at the Institute's expense. After thirteen weeks, the student will be placed in inactive status with respect to the Graduate School. The student's placement in the Graduate School will be assured for an additional twenty-six weeks (without stipend or benefits). If the student is unable to return to normal student activities after this time, the student will be withdrawn from the program. Such students may request re-admission to the program by written appeal to the Graduate School Dean.

## **Faculty**

The primary faculty members for the Van Andel Institute Graduate Program are the Van Andel Research Institute Principal Investigators. Appointment to the Institute as a principal investigator typically requires a Ph.D., M.D., or equivalent academic degree plus a distinguished record of scholarship and contributions to the scientific community.

Adjunct faculty members may supplement the permanent faculty. The adjunct faculty members participate in the life of the Institute as cooperating instructors for VAI-GS courses, as members of VAI-GS thesis advisory or defense committees, or as facilitators of professional development programs.. Typically they are faculty members from local colleges/universities, postdoctoral fellows at VARI, or practicing professionals.

Following are the VAI Graduate School faculty as of November, 2007:

Arthur S. Alberts, Senior Scientific Investigator in the Laboratory of Cell Structure and Signal Integration. Ph.D. (1993), University of California, San Diego.



Brian Cao, Senior Scientific Investigator in the Laboratory of Antibody Technology. M.D. (1986), Beijing Medical University, P.R. China.

Nicholas S. Duesbery, Deputy Director for Research Operations and Senior Scientific Investigator in the Laboratory of Developmental Cell Biology. M.S. (1990) and Ph.D. (1996), University of Toronto, Canada.

Kyle A. Furge, Scientific Investigator in the Laboratory of Computational Biology. Ph.D. (2000), Vanderbilt University School of Medicine.

Brian B. Haab, Senior Scientific Investigator in the Laboratory of Protein Microarray Technology and Cancer Diagnostics. Ph.D. (1998), University of California, Berkeley.

Rick Hay, Deputy Director for Clinical Programs and Senior Science Investigator in the Laboratory of Noninvasive Imaging & Radiation Biology. Ph.D. (1977) and M.D. (1978), University of Chicago.

Jeffrey P. MacKeigan, Scientific Investigator in the Laboratory of Systems Biology. Ph.D. (2002), University of North Carolina.

Cindy K. Miranti, Scientific Investigator in the Laboratory of Integrin Signaling and Tumorigenesis. M.S. (1982), Colorado State University and Ph.D. (1995), Harvard Medical School.

James H. Resau, Deputy Director for Special Programs and Distinguished Scientific Investigator in the Laboratory of Analytical, Cellular & Molecular Microscopy and Laboratory of Microarray Technology. M.S. (1977) and Ph.D. (1985), University of Maryland.

Pamela J. Swiatek, Senior Scientific Investigator in the Laboratory of Germline Modification and Cytogenetics. M.S. (1984) and Ph.D. (1988), Indiana University; M.B.A. (2005), Purdue University.

Bin Tean Teh, Distinguished Scientific Investigator in the Laboratory of Cancer Genetics. M.D. (1992), University of Queensland, Australia, and Ph.D. (1997), Karolinska Institute, Sweden.

Steven J. Triezenberg, Dean of the Graduate School and Scientific Investigator in the Laboratory of Transcriptional Regulation. Ph.D. (1984), University of Michigan.

George F. Vande Woude, Research Director and Distinguished Scientific Investigator in the Laboratory of Molecular Oncology. M.S. (1962) and Ph.D. (1964), Rutgers University.

Craig P. Webb, Scientific Investigator in the Laboratory of Tumor Metastasis and Angiogenesis. Ph.D. (1995), University of East Anglia, England.



Michael Weinreich, Scientific Investigator in the Laboratory of Chromosome Replication. Ph.D. (1993), University of Wisconsin–Madison.

Bart O. Williams, Senior Scientific Investigator in the Laboratory of Cell Signaling and Carcinogenesis. Ph.D. (1996), Massachusetts Institute of Technology.

H. Eric Xu, Senior Scientific Investigator in the Laboratory of Structural Sciences. Ph.D. (1994), University of Texas Southwestern Medical Center.

### Faculty Committees

Faculty members are involved in the governance of the graduate school through appointed committees.

- **Graduate Program Committee:** Composed of three or four faculty members, a VAEI staff member, and a graduate student, this committee recommends policy on graduation requirements, curriculum, admission, and faculty. This committee also monitors the program and advises the Graduate Dean on administrative matters.
- **Admissions Committee:** Composed of faculty members and one student member; oversees the student recruitment process, reviews all applications, and makes recommendations to the Graduate Dean.
- **Comprehensive Examination Organizing Committee:** Composed of two faculty members, appointed by the dean to staggered two-year terms; supervises the preparation and administration of the comprehensive examinations as outlined in the Graduate Program Manual and any associated policies.
- **Curriculum Committee:** Composed of three faculty members and one post-doctoral associate or graduate student. Members will be appointed to two-year terms, staggered to ensure continuity of experience; oversee the design, implementation and evaluation of the degree requirements, coursework, and grading policies of VAI-GS. The committee will assess whether the course offerings provide adequate instruction in the core disciplines for the VAI-GS. The committee will approve special topics courses (graduate seminar courses).
- **Student Performance Review Committee:** Composed of two faculty members, appointed by the dean to staggered two-year terms; assess the progress of each student with respect to the requirements for completing the intended degree. These evaluations will be conducted on a semi-annual basis. These reviews will be based on reports from course coordinators, thesis advisors and thesis advisory committees, and the student being evaluated. The Student Performance Review committee will report to the Dean with recommendations regarding the continued participation of the student in the graduate program.

## **Legal Status**

### Governance



The corporate name of the school is the Van Andel Institute Graduate School. A Board of Directors appointed by the Van Andel Education Institute Trustees governs the school. The Directors include persons with distinguished careers in biomedical research, higher education, and clinical training. The Dean of the Graduate School administers the school with advice from faculty committees. The Board normally meets in the spring and fall.

### Authorization and Accreditation

The VAI Graduate School is incorporated in the state of Michigan and is authorized to award the M.S. and Ph.D. degrees. The graduate school has also begun the process for accreditation by the Higher Learning Commission of the North Central Association of Colleges and Schools. This process cannot be completed until the first students graduate. We expect to vigorously pursue accreditation once we are eligible.

### Compliance with Legal Requirements

The Van Andel Institute Graduate School operates in a nondiscriminatory manner with regard to race, religion, color, age, or national origin per Title VI of the Civil Rights Act of 1964. The Graduate School also provides equal opportunity for qualified persons with disabilities in accordance with the requirements of the Rehabilitation Act of 1973, Section 504, and the Americans with Disabilities Act of 1990. The Graduate School does not discriminate on the basis of gender in its academic, student, or employment policies. Allegations of failure to comply with these laws should be presented to the Director of Human Resources.

### **Amending and Revising this Manual**

Any faculty member or graduate student may submit proposals to amend or revise the *VAI Graduate School Manual*. Amendments to be considered must be written and circulated to the faculty and graduate students not less than 14 days prior to the meeting at which they are to be voted upon. Amendments must be passed by a majority of the "voting faculty". The manual should be reviewed re-approved at periodic intervals no greater than five years.

This document was originally approved by vote of the faculty on February 23, 2007. This document was revised on December 14, 2007.



## **Administration**

The Van Andel Graduate School is a wholly owned subsidiary of the Van Andel Education Institute, which works in close association with the Van Andel Institute and the Van Andel Research Institute. The Graduate Dean, Dr. Steven J. Triezenberg, is the chief administrator of the Graduate School, which is supported by the other partner institutes. The full administration includes the following persons:

David Van Andel, VAI Chief Executive Officer  
Steve Heacock, VAI Chief Administrative Officer  
George Vande Woude, Ph.D., VARI Director  
Gordon L. Van Harn, Ph.D., VAEI Director  
Joseph Gavan, Vice President for Communications and Development  
R J. Frick, Chief Financial Officer  
Bryon Campbell, Ph.D., Chief Information Officer  
Linda Zarzecki, Director of Human Resources  
Carolyn Witt, Director of Grants and Contracts  
Timothy Myers, Controller  
Kevin Denhof, Chief of Security  
Richard Disbrow, Purchasing Manager  
Sam Pinto, Building and Maintenance Supervisor

## **VAI Graduate School Board of Directors**

James N. Boelkins, Ph.D., Provost at Hope College in Holland, Michigan.

James B. Fahner, M.D., Chief of Hematology/Oncology at DeVos Children's Hospital in Grand Rapids, Michigan.

Nita J. Maihle, Ph.D., Professor of Obstetrics/Gynecology and Reproductive Sciences at Yale School of Medicine in New Haven, Connecticut, and Chair of Women in Cancer Research Council of the American Association for Cancer Research.

Fritz M. Rottman, Ph.D., Emeritus Professor and Chairman of Molecular Biology and Microbiology at Case Western Reserve University, Cleveland, Ohio. Member of the Van Andel Research Institute Board of Trustees.

John L. Wang, Ph.D., Professor of Biochemistry at Michigan State University, East Lansing, Michigan.

Gordon L. Van Harn, Ph.D., Director of the Van Andel Education Institute and Emeritus Provost and Professor of Biology at Calvin College, Grand Rapids, Michigan.