



# **Basic and Translational Cardiovascular Research Training Program**

**Handbook  
2024-2025**

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## Overview of the UVA CVTG

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### Mission

The goal of our NIH Basic Cardiovascular Research Training Grant (CVTG) Program is to train individuals to become outstanding biomedical scientists who will pioneer major advances in our understanding of CV biology and disease and develop novel therapeutic interventions through research.

### Program Overview

Name of Director	Tenure as Director
Robert M. Berne, Ph.D.	1967-1986
Brian R. Duling, Ph.D.	1986-2012
Gary K. Owens, Ph.D.	2012-present

Cardiovascular disease (CVD) is the leading worldwide cause of death, and alterations in the function of vascular cells also play a key role in the pathogenesis of nearly all major human diseases including cancer, diabetes, and neurodegenerative disease. While there has been significant progress in our understanding of CVD and related diseases in the last decade, there are still major deficiencies in our understanding of these diseases and our ability to prevent or treat them effectively.

We provide broad interdisciplinary training in basic cardiovascular biology and disease as well non-cardiovascular diseases such as cancer and neurodegenerative diseases where cardiovascular dysfunction plays a critical role. Trainees get exposure to all major scientific disciplines including cell and molecular biology, immunology, biomedical engineering, neuroscience, biochemistry, pharmacology, and genetics/omics just to name a few. The central component of the program is the opportunity to do high impact original CV research with one or more of our 42 CVTG mentors. In addition, we provide numerous workshops, seminars, specialized courses, and other activities designed to optimize your ability to do truly outstanding research. Areas of research emphasis include studies of basic cardiovascular function (focus on smooth muscle, endothelium, and leukocytes), as well as cardiovascular diseases (focus on atherosclerosis, hypertension, and stroke). Our faculty members and their trainees use state-of-the-art experimental approaches to address some of the most important problems in medical science. A major and continuing focus of our studies is to develop novel drugs, devices, diagnostic methods, and therapeutic approaches to advance treatment of cardiovascular diseases.

The training program supports 8 pre-doctoral and 7 post-doctoral trainees. The first year of training for graduate students is done in one of 7 Biomedical Sciences (BIMS) Graduate Programs after which the trainee chooses a research mentor and a PhD Program for completing their training. These degree programs work in concert with our CVTG to optimize and customize your PhD training program with the degree program providing a general foundation of knowledge and skills, and the CVTG providing specialty training in CV biology and disease.

Post-doctoral fellow training is primarily under the direction of a research mentor. However, given the complexity of modern biomedical research, all trainees are urged to interact and collaborate with multiple labs, and the training in your individual labs is augmented by the various training activities of the CVTG. The training of both pre- and post-doctoral fellows includes the following: 1) a monthly cardiovascular research-in-progress presentation series (the RIP's) which includes presentations by fellow trainees, "hot seat" sessions,

and elevator talks (3-5 minute summary presentations); 2) grant writing workshops and grant brewing sessions; 3) a CVRC/CVTG seminar series; 4) specialized advanced CV courses; 5) workshops and courses for professional advancement including time management, starting your own lab, interviewing for jobs, managing your own lab, working in industry or the biotechnology field, doing translational research, etc. ; 6) an annual research retreat; and 7) attending and presenting your research at national/international meetings. Our training program is strongly backed by the University of Virginia, School of Medicine, which has established the Cardiovascular Research Center (CVRC) as a focus for coordinating cardiovascular research and training throughout the University.

***Only citizens and permanent residents of the United States are eligible for training grant support, according to regulations set forth by the National Institutes of Health, the funding agency for this program.***

## ***Administrative Structure***

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### **UVA CVTG Administration**

G Owens, PhD	Molecular and genetic mechanisms that control the stability of advanced atherosclerotic lesions	Program Director, Executive Committee Chair; Professor of Molecular Physiology and Biological Physics
B Isakson, PhD	Intercellular Communication in Normal and Disease State Vasculature.	Program Co-Director, Executive Committee Vice Chair; Professor of Molecular Physiology and Biological Physics
N Leitinger, PhD	Role of Lipid Oxidation Products in Inflammation and Vascular Immunology in Atherosclerosis and Diabetes	Associate CVRC Director, Executive Committee Member; Professor of Pharmacology
S Peirce-Cottler, PhD	Computational Systems Biology, Microvascular Remodeling, Stem Cells	Associate Director for Scientific Programs, Executive Committee Member; Professor of Biomedical Engineering
K Hirschi, PhD	Control of vascular development and angiogenesis	Associate Director for Curriculum, Executive Committee Member; Professor of Cell Biology
K Walsh, PhD	The Walsh Lab broadly examines the molecular events that drive cardiovascular cell growth, differentiation and cell death	Advisory Committee; Professor of Research, Medicine, and Cardiovascular Medicine
U. Eyo, PhD	Microglia in neurodevelopment and neurodevelopment disorders	Advisory Committee; Assistant Professor, Center for Brain Immunology and Glia, Neuroscience Department,
M Civelek, PhD	Identification of genetic mechanisms that lead to increased susceptibility to cardiovascular and metabolic diseases	Advisory Committee; Assistant Professor of Biomedical Engineering; Resident Faculty at the Center for Public Health Genomics
J Saucerman, PhD	Roles of Complex Signaling Networks Involved in the Regulation of Cardiovascular Function and Disease	Advisory Committee; Associate Professor of Biomedical Engineering
J Miano, PhD	Transcriptional regulation of gene expression; pathobiology of SRF and myocardin; genome mining	External Advisory Committee; Associate Director, Aab Cardiovascular Research Institute, Augusta University
Luisa Iruela-Arispe, PhD	Molecular mechanisms that regulate angiogenesis during development and in pathological conditions	External Advisory Committee; Stephen Walter Ranson Professor and Chair, Department of Cell and Developmental Biology, Northwestern University Feinberg School of Medicine
M Sturek, PhD	Cellular and molecular mechanisms for in vivo cardiovascular phenomena.	External Advisory Committee; Chairperson, Professor of Cellular & Integrative Physiology, Professor of Medicine, Indiana University

Dr. Owens is involved with all aspects of the program and reports directly to the Dean of the School of Medicine, Dr. Melina Kibbe. However, to spread the considerable administrative responsibilities of the Program, and to ensure a high level of programmatic oversight of training, we have created an Executive Committee consisting of the Program's Co-Directors Drs. Owens and Isakson, the CVRC Associate Director

Norbert Leitinger, and two Associate Director Positions with well-defined responsibilities. The Associate Director positions include *Curriculum and Workshops* (Dr. Hirschi) and *Scientific Programs and Student Advising* (Dr. Peirce-Cottler). Drs. Owens, Isakson, and Leitinger plus the CVTG Associate Directors, plus 4-6 additional faculty members and the Program Administrator form the CVTG Advisory Committee which jointly make most major decisions regarding program administration including decisions on trainee appointments, mentor review and approval, and overall training program design, although the latter involves input from many others including the Dean, Associate Dean for Graduate and Medical Scientist Programs, CVTG faculty mentors, and an External Advisory Committee.

Day-to-day administrative duties are carried out by Drs. Owens and Isakson along with the CVTG Program Administrator, Mary Sheffer. These duties include all trainee-related matters and program formation. The CVTG Program Administrator maintains database and fellows' records, coordinates recruiting, processes reimbursements, oversees fellows' stipends and funding, oversees the program's website, organizes fellows' meetings with the Director and Associate Directors, facilitates translational clinical experiences, and plans training program activities.

The Associate Directors are appointed by Dr. Owens.

#### **Associate Director of Curriculum and Workshops**

The Associate Director for Curriculum and Workshops, Dr. Karen Hirschi, oversees CVTG Courses offered, including course content and emphasis, as well as coordinating scheduling to avoid conflicts with other crucial courses and seminar series. These courses include Advanced Vascular Biology and Career Development.

#### **Associate Director of Scientific Programs and Student Advising**

The Associate Director for Scientific Programs and Student Advising, Dr. Shayn Peirce-Cottler, assists the Directors in developing programmatic activities to promote interaction and scientific exchange between the CVTG fellows and to foster their development as scientists. These activities include participation in monthly Research in Progress meetings, grant brewing sessions, special workshops, annual progress report meetings, etc.

#### **Executive Committee**

The Executive Committee is composed of the co-Directors, Associate CVRC Director, two Associate CVTG Directors (Gary Owens, Norbert Leitinger, Brant Isakson, Shayn Peirce-Cottler, Karen Hirschi), and the Program Administrator. The CVTG Advisory Committee is responsible for reviewing and evaluating pre-doctoral applications whereas post-doctoral candidates are reviewed by the Executive Committee. Committee members may also be asked to interview prospective trainees. The CVTG Advisory Committee is also responsible for reviewing and evaluating each fellow's progress through the annual progress report and meeting. The purpose of these meetings is to review the written progress report, discuss the fellow's research progress, outline a timeline for completion of training, identify long term career plans, and identify any problems that may need further attention, including issues with mentoring or funding. CVTG Advisory Committee members do not sit in the meeting for their own trainees.

## Financial Support for CVTG Pre-doctoral Fellows

CVTG Pre-doctoral Fellows' Benefits:	<i>Amounts reflect the 2024-2025</i>
Stipend	Base \$36,500 (\$28,224 from the CVTG)
Tuition & Fees	3 Semesters of Graduate School (Fall, Spring, Summer)
Health/Dental	\$4040 Health Insurance Subsidy (amount increases annually) *estimate* \$297 Dental (from GPO) *estimate*
Travel	\$1000 (up to) *See Attendance section*
Books, software, & computer	\$750 (up to) *See Attendance section*
1 journal subscription and 1 organization membership at trainee level	

### Stipend

The current BIMS base stipend is \$36,500 for fiscal year 2024-2025, with \$28,224 provided from the NIH CVTG T32 HL007284. Student stipends may be higher than \$36,500 based on numerous factors. If a student receives an individual extramural fellowship such as an American Heart Association (AHA), Department of Defense (DOD), National Science Foundation (NSF), or National Research Service Award (NRSA) among others, students can request a merit increase to their stipend. If a fellow is awarded an extramural fellowship, he/she may be eligible for a merit bonus stipend in the amount of \$1,000. The process of requesting the merit increase is to write to the BIMS Administrator, BIMS director, CVTG Director, and the mentor together to request the merit raise. If these individuals agree a merit supplement is warranted, it must be approved by the Associate Dean for Graduate and Medical Scientist Programs (Dr. Janet Cross). Once a decision is made, the BIMS Administrator sends information to the funding coordinator in the Graduate Programs Office to set it up. The CVTG follows a traditional fiscal year calendar from July 1 to June 30 of the following year. Funding is allocated by the FY. All fellows on the CVTG are supported by a monthly stipend.

There are times during graduate years that a student can move from stipend (paid monthly) to wages (paid out bi-weekly). It will depend on the program and funding source which one a student will receive. All students should stay in close contact with their BIMS Administrator to make sure they understand their funding situation.

Tax statements are not provided to any student other than the monthly email sent stating that a deposit is pending. These should be retained for tax recording purposes. Pre-doctoral students can expect to hear from various administrative people in May and June to ensure that funding is in place; if there are any concerns about upcoming funding shifts, please do not hesitate to contact your BIMS Administrator or the CVTG Program Administrator.

## Tuition and Fees

The CVTG funds pre-doctoral fellow tuition and fees, while the fellow is on the CVTG. Tuition and fees will be paid for three semesters (Fall, Spring, and Summer; semester order based on appointment start date) per appointment year.

During the rest of the pre-doctoral fellows' Graduate School training, Ph.D. Mentors are responsible for full financial support of students. Sources of funding during this period include mentors' research grants, support from departmental or center funds, and/or individual extramural fellowships obtained by students.

## Health and Dental Insurance

The current Graduate Programs policy is to provide coverage for the pre-doctoral fellow's health and dental insurance. The fellow can pay an additional amount for family coverage.

Students can enroll in the UVA Health Insurance Program through Chickering and the UVA Dental Insurance Program through United Concordia, both are divisions of Aetna. Students must register annually for health and dental and are not automatically registered. When completing the online application, the system should not prompt students to pay. If this occurs, the student should notify their BIMS Administrator and try processing the application a couple of days later. Should students elect to purchase other insurance, they should notify their BIMS Administrator and the CVTG Program Administrator, and then they must submit the proper documentation quarterly for reimbursement within the same fiscal year. Dental insurance is optional and students must complete an application annually and pay with a personal check by the October deadline. A copy of the cancelled check is necessary in order to receive reimbursement. ***It is the responsibility of the student to submit and complete paperwork regarding health and dental insurance reimbursement.***

Short term coverage is available and a number of options are listed on the student health insurance website. Do not hesitate to contact the Assistant Director should you have an emergency situation. [www.gradmed.com](http://www.gradmed.com)

Please refer to <http://www.virginia.edu/studenthealth/insurance.html> for more information.

## Travel and Book Funds

Fellows who have at least 80% attendance to program activities will be awarded up to \$1000 in travel funds and \$200 book or computer program funds per appointment year. Please see the Attendance Policy in the section CVTG Events for further details and requirements. Flights and conference registration can be purchased prior to travel with the Program Administrator. Lodging, meals, car rental, taxi rides, etc. must be reimbursed. Boarding passes, itemized receipts, and other travel information should be submitted to the Program Administrator within 5 business days of returning from the trip. More travel information and details can be found at [www.procurement.virginia.edu/pagetravel](http://www.procurement.virginia.edu/pagetravel) or by contacting the Program Administrator.

Fellows may purchase books through the Program Administrator by emailing book titles, ISBNs, and whether a specific edition is needed or the fellow may purchase a book and submit a receipt for reimbursement.

## Journal Subscription and Organization Membership

Fellows who have at least 80% attendance to program activities and are in good standing are eligible for one journal subscription and organization membership per appointment year. See the Program Administrator to purchase a subscription or membership.

***Items not covered by CVTG Funds:***

**Vaccinations, thesis binding, research funds, testing fees, and instruments**

## Financial Support for CVTG Post-doctoral Fellows

CVTG Post-doctoral Fellows' Benefits:	Amounts reflect the FY24 budget	
Stipend  * If advisors want to pay at a higher level than what is allotted by the NIH CVTG, they may supplement with non-NIH funds <b><i>only</i></b> .	Years of Relevant Experience	Stipend Amount
	0	\$61008
	1	\$61428
	2	\$61884
	3	\$64356
	4	\$66492
	5	\$68964
	6	\$71532
	7	\$74088
Tuition & Fees	As needed for courses	
Health/Dental	Low or High Premium; Fellow covered, spouse/ children coverage to be paid by Mentors Non-NIH grant funding; See chart below for charges	
Travel	\$1000 (up to) *See attendance section*	
Books, software, & computer	\$750 (up to) *See attendance section*	
1 journal subscription, 1 organization membership at trainee level, 1 UVA gym membership		

### Stipend

The current base stipend is set by the NIH at the above listed levels of experience based on appointment date. Advisors may choose to supplement the fellow with non-NIH funds. If a fellow is awarded an extramural fellowship, he/she may receive a different stipend level. Post-doctoral fellows are paid by stipend around the 6<sup>th</sup> of each month for that month. A Fellow may switch to a Research Associate with the awarding of an extramural fellowship, which will result in a pay schedule change. Please be aware of and in contact with the Program Administrator to anticipate these changes.

The CVTG follows a traditional fiscal year calendar from July 1 to June 30 of the following year. Funding is allocated by the FY. A form for direct deposit will be submitted along with appointment paperwork.

Tax statements are not provided to any fellow other than the appointment letter and pay data form used when setting up the appointment. These should be retained for tax recording purposes. Please see <https://www.nationalpostdoc.org/page/TaxIssues?&hhsearchterms=%22taxes%22> for information about postdoctoral tax issues.

Post-doctoral fellows have to sign an NIH “pay back” agreement (PHS 6031) as part of their agreement to being appointed. Individuals receiving postdoctoral support under individual fellowships or institutional research training grants, have a payback obligation that is incurred for the first 12 months of Kirschstein-NRSA support. However, the 13<sup>th</sup> and subsequent months of postdoctoral NRSA supported research-training serves to pay back this obligation month by month. This payback can be in the form of one month of work in the field



of science (including teaching and industry) for every month up to 12 months that they received an NRSA postdoctoral fellow stipend. Note that the second year of a post-doctoral fellowship qualifies as a payback as does taking a teaching, biomedical industry, or other science-related position.

### Tuition and Fees

The CVTG will fund pertinent tuition and fees for post-doctoral fellow courses, while the fellow is on the CVTG. Please submit in writing to the Director and the Program Administrator a request for tuition, course description, and details of relevance and need.

### Health and Dental Insurance

Postdoctoral Fellows have two health plan options:

- Value Health, a low-premium program similar to the Postdoctoral Fellow Low Plan
- Choice Health, a high-premium program similar to the Postdoctoral Fellow High Plan

**In addition to choosing a health plan program, you must complete a spousal affidavit in order for your spouse to be on your plan.**

### UVA Health Plan Postdoctoral Fellows Monthly Premiums 2024

New Plan Name	Single	Employee + Child(ren)	Employee + Spouse	Family
Value Health	\$705.50	\$1190.00	\$1554.00	\$2243.25
Choice Health	\$804.50	\$1364.25	\$1778.00	\$2567.75

### Travel and Book/Computer Program Funds

Fellows who have at least 80% attendance to program activities will be awarded up to \$1000 in travel funds and \$200 book/computer program funds per appointment year. Please see the Attendance Policy in the section CVTG Events for further details and requirements. Flights and conference registration can be purchased prior to travel with the Program Administrator. Lodging, meals, car rental, taxi rides, etc must be reimbursed. Boarding passes, itemized receipts, and other travel information should be submitted to the Program Administrator within 5 business days of returning from the trip. More travel information and details can be found at [www.procurement.virginia.edu/pagetravel](http://www.procurement.virginia.edu/pagetravel) or by contacting the Program Administrator.

Fellows may purchase books through the Program Administrator by emailing book titles, ISBNs, and whether a specific edition is needed or the fellow may purchase a book and submit a receipt for reimbursement.

### Journal Subscription and Organization Membership

Fellows who have at least 80% attendance to program activities and are in good standing are eligible for one journal subscription and organization membership per appointment year. See the Program Administrator to purchase a subscription or membership.

### **Intramural Sports and Athletic Facilities Membership**

A request for a letter of authorization identifying the post-doctoral fellow who would like to use these facilities should be sent to the Program Administrator. The authorization letter should be taken to The Director, Intra-Mural Sports and Recreation, Aquatic and Fitness Center, Whitehouse Road from 8:00 am – 5:00 pm Monday through Friday. The annual charge for using these facilities is approximately \$450. The CVTG can reimburse you for this charge; please give or email a receipt to the Program Administrator. Details about all the facilities available and their hours of operation are available by visiting <http://www.virginia.edu/ims> or calling 924-3791.

### **Office for Post-doctoral Programs**

The Office for Post-doctoral Programs works on behalf of Post-doctoral Fellows at the University of Virginia, sends out relevant notices, and runs a career development seminar series. The website <http://www.virginia.edu/vpr/postdoc/index.html> has information regarding insurance, events, and links to helpful resources. For questions regarding postdoctoral issues, please contact 243.2018 or [postdoc@virginia.edu](mailto:postdoc@virginia.edu).

*Items not covered by CVTG Funds:*

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**Vaccinations, thesis binding, testing fees, and instruments**

## UVA CVTG Courses and Events

Attendance Required Courses and Events	Details
Vascular Biology Course (BIMS 8052, 8053)	Annually, in the Spring
Advanced Physiology Course (BIMS 8040, 8041)	Annually, in the Spring.
Ethics Course (BIMS 7100)	A short course offered every Spring.
Cardiovascular Research Center Seminar Series	Most Thursdays during the academic year at 11:00 AM-12:00 pm in MR5 3005, unless otherwise noted or via Zoom. Special seminars may occur on other days, at other times, or during the summer.
Annual Robert M. Berne Distinguished Lecture	Annually, in the Fall/Spring. Date/Location TBD.
Research in Progress Sessions	3 <sup>rd</sup> Thursday of every month, 4:00-5:30 pm MR6 2502 or via Zoom
Grant Brewing Workshops	Attend all trainee grant brewing sessions and present at least one of your fellowship grants sometime during the year. Date/Location TBD.
Trainee Run Career Development Course	In the Spring, Mondays at 10:00 AM, Location/Dates TBD (various days possible).
Translational Clinical/Observation Experience	2 half-day experiences per year, individually scheduled. (see listing)
Recommended Courses and Events	Details
CVTG Faculty Grant Brewing Workshops	Select dates and times during the year.
International Collaborations	Opportunities individually arranged. Attend and present at National and International research conferences. TBD

There are several CVTG activities to supplement the training provided by degree granting graduate programs and bench work. CVTG activities are extremely important in promoting the unique development of scientists and to allow them to identify with a cohort group with similar goals and expectations. Attendance is required unless otherwise noted.

### Vascular Biology (BIMS 8052, 8053)

Vascular Biology is a broad interdisciplinary course considering the basis for vascular function from a physiological and pathophysiological perspective. Topics include basic microcirculatory function, smooth muscle and endothelial cell function and development, capillary exchange, inflammatory processes, leukocyte endothelial cell interactions, and the pathophysiology of atherogenesis. Topics such as vascular control, angiogenesis, and inflammatory responses of the cardiovascular system will be highlighted. Prerequisite: One course in mammalian physiology and one in cell biology. The course is split into two modules.

### Advanced Physiology Course (BIMS 8040, 8041)

The course will integrate background cellular and molecular knowledge into organ systems and whole animal, function. It is intended to provide the ability to integrate knowledge at the molecular level into function, the foundation of translational-based research. The physiology to be covered will include the nervous system, metabolism and endocrine systems. The course is split into two modules.

## **Ethics Course (BIMS 7100)**

Beginning in 1989, the National Institutes of Health introduced a requirement that institutions provide a program of instruction in the responsible conduct of research (NIH Guide for Grants and Contracts, Volume 18, Number 45, 1989). This was later expanded to require that all fellows on NIH training grants should receive instruction in the responsible conduct of research. The course covers: conflict of interest, responsible authorship, policies for handling misconduct, policies regarding the use of human and animal subjects, and data management. This course is designed to help trainees consider each of these areas and therein formulate an understanding of responsible conduct in research. Trainees must take an Ethics Course at each career stage (graduate student, post-doctoral fellow, etc.) or at least once every four years.

## **Cardiovascular Research Center Seminar Series**

The Robert M. Berne Cardiovascular Research Center Seminar Series is a long-running and well-established seminar series hosting many renowned scientists and clinicians each year. Speakers are selected to span the broad range of cardiovascular research, and to educate the trainees in matters beyond their immediate bench research needs. Fellows and former fellows have the opportunity to meet with invited guests one-on-one or for breakfast or lunch. Trainees also invite and host at least 6-8 seminar speakers per year.

## **Annual Robert M. Berne Distinguished Lecture**

The Annual Robert M. Berne Distinguished Lecture is a highlight of Cardiovascular Research Center year, which is given in the fall, by a scientist of outstanding caliber. The list of past Lecturers includes three Nobel Prize winners and numerous members of the USA National Academy of Science. The trainees will attend the Lecture, Reception, and also meet with the speaker in a roundtable lunch session.

## **Research in Progress (RIP) Meetings**

The goal of the RIP series is to promote scientific interactions between the fellows and to provide a forum for issues particular to biomedical scientists in cardiovascular research. The venue includes a mixture of formal presentations, roundtable discussions, Elevator Pitches, and brief informal research presentations by fellows followed by a lively discussion of the project and of its significance, alternative approaches (Hot Seat). A comprehensive set of documents related to how to present at different RIP's is located in Appendix D: CVTG Research in Progress Sessions Formats, Guidelines, and Suggestions.

The RIP meetings run from 4:00 to 5:30 pm every third Thursday of the month. Attendance is required unless there is an unavoidable prior professional/academic commitment (see elsewhere) and excused in advance by the CVTG Director.

All CVTG Mentors are invited to RIP in addition to the Director and Associate Directors. New Mentors and newly-appointed trainees who attend RIP for the first time are introduced and are asked to give a 3-4 minute summary of their research programs at the beginning of the session. This serves to familiarize fellows with some of the mentors in the Program and often leads to fellows seeking out those individuals to explore readings courses, rotations, collaborations, assistance with a technique, etc.

## **Grant Brewing Workshop**

These are intense sessions in which a trainee OR a faculty member prepares the specific aims page of their extramural grant or fellowship. The aims are distributed in Word format to CVTG trainees and faculty a minimum of one week in advance of the grant brewing session. They then give a no more than 5 slide <15 minute presentation summarizing the project focusing on brief background, rationale, preliminary data, hypothesis, and specific aims. The presentation is given to a mixed audience of CVTG trainees and faculty for

comment and constructive criticism. These sessions serve to identify weaknesses in experimental approach, lack of clarity, or flawed techniques early enough for the presenter to remedy the application. Trainees are required to do at least one grant brewing session each year of their appointment. Historically, fellowship grants that go through this process have a 3-4-fold higher funding rate.

**We require all trainees** to begin preparation of an application for submission for external funding as soon as they are assigned to the CVTG. To facilitate this, Dr. Gary Owens offers a lecture and discussion in grant writing near the end of the Fall semester, and with that preparation, and the mentor's input, trainees complete an extramural grant (AHA, NRSA, NSF, APS, etc.) their first year of appointment. These activities have been tremendously beneficial in improving the quality of the science and proposals, as exemplified by the outstanding success of our trainees in securing individual competitive extramural fellowships. **Trainees who fail to submit a fellowship during their first year on the CVTG are unlikely to be re-appointed a second year except under extenuating circumstances.**

Fellows are required to attend Grant Brewing Workshops of other CVTG trainees and encouraged to attend faculty grant brewing sessions when the topic is relevant to their area of research interest.

### **Translational Clinical/Observation Experience**

With the increasing recognition of the importance of translational research and of the need for integrative studies for our trainees in cardiovascular biology, we have initiated a Translational Research Enhancement Program for our Cardiovascular Research Trainees. Many of our fellows are highly focused on cellular and molecular research programs in their laboratory work, and they are more and more likely to be separated from the ultimate product of NIH sponsored research, that is, the illness and the patient. To address this deficiency, we have developed a program for exposure of basic scientists in training to clinical activities.

We have brought together a group of clinician-scientist faculty members involved in both cardiovascular medicine and basic cardiovascular research. Each trainee is asked to select an individual from this group and to have 2 cardiovascular-related clinical environment experiences. Clinical activities include cardiology and pediatric cardiology clinics, cardiac catheterization laboratory, cardiac and vascular anesthesia, cardiac and vascular surgery, cardiovascular pathology, etc. Ideally, the clinical scientist chosen will have a parallel research interest with the fellow, but that is not required. See a list of clinicians in Appendix C.

### **Career Development Course**

The trainee-led Career Development Course is designed to provide the information in development as an independent researcher/faculty member that is not heard elsewhere. Over the series we will review a variety of topics designed to aid in a successful transition from being a trainee to an independent scientist. This course is held on select Mondays in MR5 1005 from 10:00 AM to 11:30 AM. Sometimes there is a need for special circumstances and other days or times may occur.

### **International Collaborations**

Many of our CVTG Mentors have developed international collaborations that provide trainees the opportunity to spend some time (usually 1-3 months) doing research abroad. These international research opportunities have been bolstered by three CVTG Mentors (Drs. Civelek, McNamara, and Owens) each being awarded prestigious Leducq Foundation International Research Networks of Excellence grants. In addition, a unique collaboration has been established between Dusseldorf University and UVA. Eleven laboratories from the two schools have paired up in complementary research projects. Each of these trans-Atlantic projects is working

on a common set of experimental goals, and German students will come to the US for 3-6 months in exchange for US students going to Dusseldorf as part of their dissertation work.

### **Other SOM Activities**

CVTG fellows also participate in many other School of Medicine activities that foster their development as scientists. This includes the Cardiology Grand Rounds, other Seminar Series, Annual Graduate Biosciences Student Symposium, Postdoc Research Poster Day, and the Presidential Poster Competition Session. Participation in these activities is optional.

### ***CVTG Attendance Policy***

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We take attendance at all activities. Excused absences for all required CVTG activities will be granted for professional/academic or unavoidable medical reasons only and **not for personal conflicts**. If you are not able to attend a required activity for any reason, you must notify the Director and Program Administrator **prior to the activity**.

Trainees who have perfect attendance qualify for up to \$750 allowance for training related expenses such as books, computer, or software. This allowance is reduced by 50% with two or more unexcused absences; >3 absences will result in loss of this allowance plus disciplinary measures starting with a meeting of the trainees with members of the CVTP Executive Committee to identify/rectify the problem and/or determine if the trainee should be allowed to continue in the program. Trainees with excellent attendance also qualify for a \$1000 travel allowance to attend scientific meetings approved by their mentors.

Please remember to sign the attendance form. If you do not, expect a follow up email asking why you were not there. You must respond to this email within a week, or you will be counted as having an unexcused absence.

The attendance record of you and your mentor for required CVTG events including monthly RIPs, weekly CVRC seminars, and grant brewing sessions will be heavily weighted in consideration of renewing your appointment to the CVTG for a second year.

Trainees are only rarely appointed to the CVTG for a third year.

### ***CVTG Reimbursement Procedures***

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There are multiple times during the program that fellows will need to be reimbursed for travel, books, health insurance, or meals with CVRC Seminar Speakers. It is imperative that all UVA Procurement policies are followed. These include, but are not limited to, per person meal limits, hotel limits, and proper documentation of purchase. Procurement Services website (<http://www.procurement.virginia.edu/pagetravelbasics>) should be consulted regularly because policies change without notice.

The travel allowance can be combined with additional funds the fellow receives from other sources (e.g. travel awards from the scientific meeting, Mentor funds, etc.). Flights and conference registration can be purchased prior to travel with the Program Administrator. Lodging, meals, car rental, taxi rides, etc must be reimbursed. Boarding passes, itemized receipts, and other travel information should be submitted to the Program Administrator within 5 business days of returning from the trip.

The table below is for reference and reflects the procedures followed when completing reimbursement requests:

### Reimbursement Required Documentation

Travel	Meals	Insurance
Original Boarding Passes, taxi receipts, other original receipts and invoices	Original ITEMIZED Receipt	Cost information (pay stub showing the amount paid)
Itinerary with airfare cost	Original CREDIT CARD Receipt	Copy of the CANCELED CHECK
Hotel Folio/Receipt, with your name	Names of the Individuals in Attendance	*DUE Quarterly

### Annual Progress Report Meetings

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In order to monitor fellows' progress and experiences in the program, annual meetings with two members of the CVTG Steering Committee (which consists of the Director, 2 Associate Directors, and 3 additional faculty members) are required. As part of this process, fellows are required to fill out the Annual Progress Report form (see Appendix B: CVTG Program Annual Progress Report) sent after the winter semester break due in early February. The reports are then reviewed by the Directors prior to your meeting. The Program Administrator will set up the Annual Progress Report meeting slots during March and April with two of the Executive Committee Members.

Fellows failing to submit their completed CVTG Annual Progress report by the deadline, and to attend the annual progress report meeting, will be reviewed by the CVTG Executive Committee to determine if they should be allowed to continue in the program. CVTG Executive Committee members do not sit in the meeting for their own trainees.

Annual Progress Report: Purposes
1. Advise on all aspects of training
2. Discuss the fellow's research progress
3. Serve as a trainee advocate
4. Strategize with the fellow about potential courses, research interests and collaborations, project timeline
5. To discuss long term career goals and their IDP
6. Identify any issues that may need further attention, including mentoring or funding

### Appendices

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## Appendix A: List of CVTG Mentors by Focus Area

### Atherosclerosis:

Gary Owens, PhD  
Coleen McNamara, MD  
Norbert Leitinger, PhD  
Mete Civelek, PhD  
Clint Miller, PhD  
Weibin Shi, PhD  
Ken Walsh, PhD  
Melina Kibbe, MD  
Nick Tsihlis, PhD  
Jonathan Lindner, MD  
Lian-Wang Guo, PhD

### Cardiovascular Imaging:

Fred Epstein, PhD  
Shayn Peirce-Cottler, PhD  
Brent French, PhD  
John Hossack, PhD  
Christopher Kramer, MD  
Bijoy Kundu, PhD  
Craig Meyer, PhD  
Ukpong Eyo, PhD  
Natasha Sheybani, PhD  
Tajie Harris, PhD  
Jonathan Lindner, MD  
Joshua Wythe, PhD

### Cardiovascular Regulation:

Brant Isakson, PhD  
Jeff Saucerman, PhD  
Swapnil Sonkusare, PhD  
Karen Hirschi, PhD  
Antonio Abbate, MD, PhD  
Jason Allen, PhD  
Muge Kuyumcu-Martinez, PhD  
Lian-Wang Guo, PhD

### Cell Signaling:

Thurl Harris, PhD  
Mark Okusa, MD  
Thomas Barker, PhD  
Brad Gelfand, PhD  
Karen Hirschi, PhD  
Ukpong Eyo, PhD  
Tajie Harris, PhD  
Antonio Abbate, MD, PhD  
Jeff Sturek, MD, PhD  
Muge Kuyumcu-Martinez, PhD  
Daniel Abebayehu, PhD  
Joshua Wythe, PhD  
Anne Kenworthy, PhD

### CV Genetics, Epigenetics, Genomics, and System Biology:

Mete Civelek, PhD  
Kevin Janes, PhD  
Coleen McNamara, MD  
Eyleen O'Rourke, PhD

Gary Owens, PhD  
Jason Papin, PhD  
Shayn Peirce-Cottler, PhD  
Steve Rich, PhD  
Eli Zunder, PhD  
Clint Miller, PhD  
Weibin Shi, PhD  
Matthew Wolf, MD, PhD  
Ken Walsh, PhD  
Karen Hirschi, PhD  
Gloria Sheynkman, PhD  
Tajie Harris, PhD  
Ali D. Guler, PhD  
Joshua Wythe, PhD  
Lian-Wang Guo, PhD

### Hypertension:

Swapnil Sonkusare, PhD  
Brant Isakson, PhD  
Nick Tsihlis, PhD  
Melina Kibbe, MD

### Metabolic Disease Obesity:

Coleen McNamara, MD  
Steve Rich, PhD  
Mete Civelek, PhD  
Clint Miller, PhD  
Norbert Leitinger, PhD  
Shayn Peirce-Cottler, PhD  
Gary Owens, PhD  
Brad Gelfand, PhD  
Ali D. Guler, PhD  
Antonio Abbate, MD, PhD  
Jason Allen, PhD  
Muge Kuyumcu-Martinez, PhD

### Smooth Muscle-Endothelial Cell Biology:

Gary Owens, PhD  
Brad Gelfand, PhD  
Shayn Peirce-Cottler, PhD  
Victor Laubach, PhD  
Richard Price, PhD  
Gloria Sheynkman, PhD  
George Christ, PhD  
Brant Isakson, PhD  
Jeff Sturek, MD, PhD  
Nick Tsihlis, MD  
Natasha Sheybani, PhD  
Nick Tsihlis, PhD  
Melina Kibbe, MD  
Jason Allen, PhD  
Muge Kuyumcu-Martinez, PhD  
Joshua Wythe, PhD  
Anne Kenworthy, PhD  
Lian-Wang Guo, PhD  
Jonathan Lindner, MD  
Karen Hirschi, PhD



## Appendix B: CVTG Program Annual Progress Report

Name:

Year of Entry (UVA, and CVTG):

**Section A: Students Only. Post-docs, proceed to Section B.**

1. Courses: (attach an unofficial transcript of completed curriculum/courses and list any courses currently being taken below. You can access a record of your grades online through SIS).
2. Lab Rotations Completed (list faculty mentor, project title, and date):
3. Ph.D. Department Candidacy Exam (degree program, date of completion or date scheduled):
4. Dissertation Proposal Exam (date of completion or anticipated):
5. Title or Working Title of Dissertation:
6. Dates of Dissertation Committee Meetings:
7. Dissertation Committee Members (indicate Mentor):
8. Anticipated thesis defense date (or year):

**Section B: All Trainees**

1. Time with Mentor—Amount and frequency of one-on-one time with your mentor per month:
2. Publications (citation list with the following categories: published, submitted manuscripts, manuscripts in preparation, and abstracts. Indicate if authored or co-authored. If none, please indicate.):
3. Grants Applied for and Grants Awarded (List grant type/agency and date applied.) All trainees must have applied for a grant by the end of their second year on the CVRC Training Grant; Postdoctoral fellows are highly encouraged to apply for a grant before the end of their first year of support:
4. Presentations at Scientific Meetings or Seminars Given (List the meeting, where it was held, the date and type of presentation, and the title of talk or poster.):
5. Research Summary—Provide a 1 paragraph summary of the research conducted during the current grant year, as well as a list of specific techniques you have mastered. Provide a summary of the work to be conducted during the upcoming year.
6. Special Topics in Cardiovascular Research (Career Development Talks)--Frequency of participation.

7. Translational Research Program:

If you participated in the translational research program during the current grant year, please provide the name and department of the clinician you worked with, dates, and a brief summary of the experience.

8. CV Training Grant RIP:

How many of the monthly RIP meetings did you attend during the current year? Did you present?

9. Other Significant Activity (awards and honors, course sections taught, leadership positions, students mentored, sessions chaired). If none, please indicate.

10. Which other seminars do you attend on a regular basis? Please specify department or series.

11. Suggestions for Training Program Improvement. Where should we improve? Is there anything about the experience that you would like us to know?

**Appendix C: Translational Clinical/Observation Experience Clinicians**

The fellow will meet with the faculty member for a preclinical orientation and didactic session which will inform the fellow of what to expect and what they might learn from this experience. During the clinical exposure, and in a didactic session following the clinical experience, the faculty member and fellow will discuss the relevance of the clinical observations to cardiovascular research issues. At one of the RIPs, trainees will share their translational clinical experiences with the group.

This list of clinicians has agreed to allow trainees to join them in the clinic. Clinical/observation experiences may be arranged with other faculty members.

<b>Name, Telephone, Email ID</b>	<b>Department and Title of Translational Research Experience</b>	<b>Research Interest</b>	<b>Clinical Interest</b>
Bourque, Jamie (MD) 2-4270; JMB8T	<b>Medicine and Radiology (focus in Cardiovascular disease):</b> Prevalence and Correlation of Abnormal Flow Reserve by Stress CMR and Non-Obstructive CAD by Cardiac CT in Symptomatic Diabetics: What is the Optimal Risk Stratification Method?	microvascular disease, comparative effectiveness, and patient-centered outcomes in coronary artery disease	coronary artery disease, noninvasive imaging and risk stratification, and dive medicine
Gimple, Larry (MD) 4-9591; LWG9Q	<b>Cardiology</b>	Mechanisms of restenosis following vascular interventions. New educational teaching tools using multimedia and digital techniques.	Interventional cardiology
Kramer, Christopher (MD) 2-4270; CMK2N	<b>Cardiology:</b> Translational Cardiovascular Imaging	Hypertrophic cardiomyopathy, Peripheral arterial disease, Cardiovascular MRI, Ischemic heart disease, Coronary microvascular disease	general cardiology, ischemic heart disease, cardiac imaging, cardiac MRI and CT, echocardiography, Hypertrophic cardiomyopathy
Matsumoto, Allan (MD) 4-9279; AHM4D	<b>Radiology &amp; Medical Imaging</b>	Atherosclerotic (humans and mice) and non-atherosclerotic vascular disease (human); device testing and development; clinical outcomes; clinical trials for FDA trials	Peripheral arterial, mesenteric arterial, renovascular and aortic disease; hypertension & ischemic nephropathy; fibromuscular dysplasia
McGahren, Eugene D. (MD) 4-5643; EDM6K	<b>Surgery:</b> Observation of clinical practice of Pediatric Surgery	Pulmonary microcirculation	General pediatric surgery, including neck, chest, abdominal conditions

Monfredi, Oliver J (MBChB, PhD) 2-6019; OJM9W ,	<b>Dept of Medicine, Division of Cardiology (Electrophysiology)</b>	arrhythmias in athletes, sinoatrial node physiology, biological pacemakers	ablation of arrhythmias, cardiac devices – pacemakers, defibrillators
Taylor, Angela (MD) 3-9396; AMT6B	<b>Interventional Cardiology</b>	Microvascular disease, women’s heart disease, novel immune mechanisms of atherosclerosis and atheroprotection in humans, phenotyping human coronary disease	Women’s heart disease, diabetes, interventional cardiology

[Appendix D: CVTG Research in Progress Sessions Formats, Guidelines, and Suggestions](#)

**RIP Session Formats and Frequency**

- 1 Strategic Planning Meeting (June)
- 1 Elevator Pitch with Introductions of trainees (July)
- 2 RIP Hot Seats (Draw names from bag)
- 6 RIP sessions with 1 presentation each
- 2 Journal Clubs
- Additional sessions for grant writing and grant brewing will be scheduled January-May

**Suggestions for all session formats**

You are presenting a limited amount of information that you know well, even though it doesn’t seem like it. Realize that the presentation is important for your development as a scientist, but you can relax in this low-pressure learning environment. Here are some suggestions for you to think about in preparing what you are going to say.

1. **Identify your audience** and gear your presentation to the individuals in the group who know the least about your topic area but connect to a larger context. This is a critical skill for all effective communication, including grant writing. Those more familiar will appreciate the refresher. Take everything you have done during your rotations or projects, boil it down, and present it in a way that everyone knows what you are talking about.
2. **Identify who you are**, what lab the work was done in, and perhaps a few words about your overall long term professional interests.
3. **Always open with a sentence that convinces your audience that what you are about to say is important and worth their attention.**
4. **Orient the audience:** State in 1-2 sentences your project and clearly identify the problem, question, or hypothesis you hope to address. Make it simple and easy to understand, yet comprehensive and interesting.
5. Tell them how you intend to **address the problem/question/hypothesis** and the rationale for choosing the experimental approach you selected.

6. **State your major findings. Give a conclusion** summarizing your findings and what is next. You don't have to have the best data in the world. People just want to see you're learning something. That is the whole point of this presentation when you get right down to it. If the best data you have is a gel that is slightly burned in the corner but illustrates a good point, show the slide. Remember the quality does not have to be publishable. Of course, it's great if you can get it there, but if not, don't fret.
7. **Practice.** This seems obvious but cannot be said enough. Memorize the first few sentences of what you plan to say, which may help if you have presentation anxiety. Ask to give the talk at a lab meeting or ask a few lab members to sit-in while you practice. Encourage them to give pointers and feedback.

### **Elevator Pitches**

Trainees should prepare a 3-4 minute introduction about themselves and their project—no slides! Also, remember that the audience will be quiet diverse from 2<sup>nd</sup> year graduate students just getting into labs to faculty and also from very different areas. These short “elevator pitches” are intended to help you connect with other scientists at conferences and meetings who may not work in your area and be as easily understood by laypeople.

### **Hot Seat Sessions**

These sessions are initiated by having Dr. Owens randomly select a trainee (by pulling a name from a jar) to give a 5-6 minute summary of their research project without slides indicating why their project is important, what has been done so far, what needs to be done, the project hypothesis, and experimental approach, where the project is going long term, and problems or limitations in their project. Other trainees then ask questions to clarify their understanding of the project. A faculty panel then quizzes the trainee audience, not the trainee presenter, on their understanding of the project. The intent is to get all trainees participating and asking those questions they had but may not have had the courage to ask. The Discussion tends to be far-ranging and the format encourages an in-depth consideration of experimental methodologies, pros and cons thereof, and potential alternative experimental approaches.

The goal is for trainees to gain experience in explaining their research quickly and succinctly to a diverse audience, and for everyone to become familiarized with the research interests of their fellow CVTG trainees. In addition, the format gives you immediate feedback on the effectiveness of your presentation, based on assessing the questions of your fellow trainees. For example, did I forget to state my major hypothesis, or did I fail to clearly explain my rationale or the experimental design, etc. The goal is to help you recognize how you might have done a better job at explaining what you are doing and why. We will strongly encourage your fellow trainees to ask questions to help clarify your presentation since those not asking questions will likely be the target of subsequent questions asked by the faculty panel.

### **RIP Research Presentation Guidelines**

1. Presentations are 15 minutes plus 5 minutes for questions at the end. You will likely be interrupted with some questions during the presentation, so your talk should be completed in approximately 20 minutes. You will be timed and if you are not done by 30 minutes total you will be asked to end the talk whether finished or not. As such, please practice your talk to ensure you cover everything you want in no more than 20 minutes.
2. Two or three research presentations are usually scheduled for one RIP session.

3. In most cases, it is best to start your talk by outlining why the topic area is important, including relating your area of research to human disease.
4. During or following your talk, pose 3-5 questions to stimulate participation.
5. Dr. Owens will ask all faculty not to ask questions at the end of your presentation until there have been at least 2 trainee questions. Faculty of course can ask points of clarification during talks.
6. Please include material in your RIP presentation that is incomplete or controversial. Don't feel like you should have a complete story before presenting data - take advantage of the great input your colleagues can provide early in a project.
7. Include a slide near the end that summarizes ongoing studies and future directions.
8. Consider presenting a last slide to address the questions, "How does this research project relate to my long term plans of being a successful scientist?"
9. The RIP is intended to be CVTG's primary forum for exchange of research ideas so please let the Program Administrator or Dr. Owens know if you have additional suggestions.

### **Journal Club**

1. Schedule as two RIP sessions year not as an additional add-on mandatory requirement.
2. To make the paper relevant to most or all trainees, groups of trainees, preferably with diverse research interests will nominate high impact papers (IP>15) that describe a broadly applicable new enabling method or technology, or which bridges multiple scientific areas or disciplines important for cardiovascular biology and disease. Alternatively, it may be a paper showing where defects in cardiovascular function contribute to the pathogenesis of other major non-CVD human diseases such as cancer or Alzheimer's disease.
3. Papers must be accepted for presentation by the CVTG Executive Committee.
4. The group of trainees who selected the paper will do a group presentation introducing the paper and topic area with an emphasis on viewing it from different scientific perspectives followed by presentation of the figures by other trainees based on a randomly drawing names.
5. At the end of the journal club, the group of trainees who selected the paper will present slides summarizing the major findings, their significance and impact, and possible future directions.