

Writing Successful Applications for Biomedical Research Training Programs

Advice from the NIH Office of Intramural Training & Education (OITE)

Basic Principles:

Before you begin assembling your application:

- Read the eligibility criteria carefully; don't waste time preparing applications to programs for which you will not be considered.
- Read all of the FAQs. Nothing makes a program director crankier than your asking a question that has already been answered.
- Follow all of the links on the website. Those links were included because someone in the training program office thought they had information that would be useful to you.
- Visit a career website (e.g., The NIH Virtual Career Center, <http://www.training.nih.gov/careers/careercenter/>) if you have questions about what various parts of the application should look like.

Read and follow all directions.

- If the directions for the cover letter ask you to discuss four points, make certain that you address all four.
- If you are asked to list all the courses you have taken and the grades you received, do not just list science courses.

Timing: Never submit your application at the last minute.

- Editing and polishing your application is important, and it takes time.
- Lots of applicants will be submitting their applications at the last minute. An electronic system may crash under the load.
- If selections for the program are made on a rolling basis, you may have an advantage if you apply early.

Ensure that everything you submit is grammatically perfect, clearly expressed, and neatly organized. This is absolutely essential!

- Write a draft, edit it repeatedly, and ask someone whose judgment you trust to read it and make suggestions for improvement.
- If you are submitting a hard copy of an application, use bold and italics, changes in font size, tabs, and white space to help the reader find important information. Your job is to make your application easy to read.
- If you are submitting an electronic application make certain to find out in advance if the system will accept formatting. For security reasons, some web-

based applications accept only plain text inputs. In this case, the only tools you will have for formatting will be capital letters, spaces, hard returns, and characters on the keyboard such as - or *. Bold, italics, tabs, Greek letters, and other fancy formatting will be stripped away or, worse still, they may be replaced by other, meaningless characters.

- Compose and polish sections for an electronic application in a word processor (or, if appropriate, a plain text editor such as Notepad or TextEdit) and then, when they are perfect, paste them into the application.

Tailor the elements of your application to the program for which you are applying even if this means writing multiple cover letters or resumes.

- The medical school recommendations that are on-file at your school will probably not address the issues that are important to a biomedical research training program, *e.g.*, your technical skills, your ability to trouble-shoot experiments in the lab. Ask for a second set of letters.
- Your NIH Academy cover letter, which should focus on health disparities, may not be an effective letter for your Postbac IRTA application.

Make certain that all of the information you submit is accurate. Supplying fraudulent information will eliminate you from consideration for a program.

Components of an Application:

- Contact information
- A cover letter
- Your resume or CV
- Letters of recommendation
- A transcript or list of courses and grades

Selection committees and individual investigators who review your application are trying to find the individual(s) who will fit most comfortably into their programs or labs and make the most significant contributions to ongoing projects. Depending on their personal preferences they are likely to be looking for individuals who speak and write well, who have some prior successful research experience, who think about science in a mature way, who are creative, who take the initiative and are self-motivated, and/or who work well in teams. Your job is to use each element of your application to demonstrate the skills, aptitudes, interests, and experiences that would make you an outstanding choice.

Contact Information: Why would we even take the time to discuss your contact information? It is important that you provide email and mailing addresses and a phone number that will permit program staff to contact you. What else is there to say? Surprisingly, many applicants to training programs provide contact information that is

less than professional. Do you really want the individuals who will be evaluating your application to think of you as “yuppieguppie07” or “DrHoney”? Do you want an investigator who is calling to offer you a position to hear the message that seemed so clever when you recorded it on your answering machine to amuse your friends?

Your Cover Letter: Your cover letter is your opportunity to “speak” persuasively to those who read your application.

- Scientists are busy people. Keep your cover letter brief, focused, and succinct; it should be no longer than two pages. Say what is important, but nothing more.
- Follow the guidelines!
- Tailor your cover letter to the particular application you are completing. Why do you want to participate in this specific program? How do your skills and experiences make you the perfect match for the program? Show that you have done your homework.
- Do not present material that is included in your resume except perhaps to highlight your major accomplishments.
- Describe realistic expectations for the training experience you are seeking. It is unlikely that you will cure both cancer and the common cold during a ten-week summer internship, for example.
- Pay particular attention to the way in which you describe your research interests.
 - If you are applying to a program in which investigators pick their own trainees, it is likely that many of them will search the application database for individuals with whom they share an interest. If you are willing to work on several areas, it might be useful to mention them all specifically to increase your chances of a “match.”
 - If you are applying to a program like the NIH Academy, which has a specific focus, be certain to describe your interest in that focus.
- Be specific. Remember that examples, stories, and details are likely to stick with the reader. It is better to provide an example that illustrates your ability to work in a team than to state that you are a team player.
- Consider commenting on your long-term educational and scientific goals and how the program might help you in meeting them.

Your Resume or CV: This document should be a concise (no more than two-page at this stage in your career) summary of your educational and professional history.

- A general format is
 - Contact information
 - Education – degree, field, institution, and date for each degree you have completed
 - Professional/work experience – include volunteer experiences if they are relevant. For each specify the dates, location, and your supervisor, again, if relevant. You may wish to list the skills you acquired during scientific

training experiences and any mentoring or supervising you were asked to provide.

- Honors and awards
- Community service/leadership experience
- Publications and presentations
- Use formatting or spacing on the page to make your resume/CV easy to read. The reader should be able to find important information quickly. The document should not have such a small font and dense presentation of the information that the reader is discouraged just looking at it. Try putting an extra hard return between paragraphs.
- Be judicious about what information you include. As you get older, childhood accomplishments will become less important. In general, once you have completed college, you would mention high school accomplishments only if they demonstrated a particularly important facet of your personality.
- Think twice before including hobbies or “Objectives.” Do they add significant information to the application? If your goal or objective is simply to obtain a spot in a training program, that fact is already apparent from your submission of an application.

Letters of Recommendation: Individuals who are evaluating applicants to a research training program are trying to identify those individuals who are most likely to complete the program successfully and who look as if they will make the greatest contributions. Letters of recommendation can provide insights into your prior successes and comments on your potential future contributions.

- If you are applying to a scientific program, the best references will come from practicing scientists. NOTE: this means that meeting and cultivating potential references is something you should always be doing.
 - More senior scientists will be more credible than graduate students.
 - A recommendation from someone who knows you personally will carry greater weight than one from a faculty member who can comment only on your performance on tests.
 - Individuals who have worked with you in a research setting are excellent choices for references.
 - Science faculty will be preferable to faculty in the humanities who will be preferable to your minister or rabbi.
- **Never** ask a family member to write a letter on your behalf.
- When you ask an individual to serve as a reference, also ask him/her if the letter will be supportive or positive. This is somewhat embarrassing, but it is far better than having a negative letter submitted.
- Provide your references with a current copy of your resume/CV; a description of the program(s) you are applying to; stamped, addressed envelopes if their letters are to be submitted as hard copies; and perhaps suggestions of areas you would like them to address in their letters.

Transcripts or Lists of Courses and Grades:

At this time in your life it is probably sensible to order several transcripts from each institution you have attended, especially those at which you have completed degrees. This will ensure that you never miss applying to a program because you did not have the required confirmation of your educational credentials.

If you are asked to submit a list of courses and grades, you are being given one more chance to demonstrate your ability to organize information and follow directions.

- Think carefully about how you will organize and format the information, again, to make it easy for the reader to follow.
- If the application is electronic, check to see that your organization has been retained during the submission process, and fix any glitches.
- Submit grades for all courses you have completed (if this is allowed). Scientists must write well. We will be pleased to see that you have earned good grades in English as well as in chemistry.
- List the courses in which you are currently enrolled and update your application, if this is possible, as you complete additional courses.
- If you have just moved to a new education level, *e.g.*, if you are a freshman in college, figure out how to communicate some information on your high school grades in this section.

To Reiterate:

Start early.

Follow directions.

Tailor your application to the program to which you are applying

Edit, proofread, and ask friends to proofread your application.

GOOD LUCK!

We have included some examples of good cover letters (#1 and #4) and some not so good letters (#2 and #3) below as well as a model CV.

Cover Letter 1

I am a current senior at X University majoring in Biology and History, with a minor in Chemistry. After graduating in May of 2007, I would like to spend a year pursuing my research interests at the NIH. As a junior, I learned about the Postbaccalaureate IRTA program and the great wealth of research opportunities available through the program. Since that time, I talked with several X graduates about their experiences with the program, and all discussed with me their enthusiasm and appreciation for what the program taught them, and how their experiences at NIH enriched their skills and interests in research. Through my four years of research experience at X, I have grown increasingly dedicated to expanding my knowledge and abilities in the field of research. I hope that given the opportunity to work as a Postbaccalaureate IRTA trainee, I can continue to pursue these goals.

I spent my first year at X under the direction of Dr. A., working on imaging cells infected with *Leishmania donovani* in order to analyze the accumulations of inorganic and organic osmolytes following infection. I enjoyed my work in the lab, and the summer following my freshman year, through the Y program, I began research in Dr. B's cell biology laboratory in the X University Medical Center. Since then, I have dedicated several independent study credits to this lab. My research has focused on the heat shock protein, GRP94 (gp96), which acts as a tumor antigen to induce anti-tumor immune responses, a process requiring receptor-mediated activation of antigen presenting cells (APCs). The unique receptor for GRP94 functioning in APC activation is currently under dispute, and was the focus of my research aims. I have implemented indirect immunofluorescence and flow cytometry methods in order to examine binding, colocalization and trafficking patterns of GRP94 and speculated receptor ligands. Other techniques I have had experience with in the laboratory include PCR, SDS PAGE, stable-cell transfection and gel electrophoresis. I am currently working on a senior thesis focused on this research.

Through my four years of research experience in college, I have grown increasingly interested in a wide variety of research areas, but particularly in cancer biology and immunology. I would like to spend the next year working on the translational or clinical applications of research focused on cancer immunology, tumor antigens, vaccine development, tumor metastasis and/or immunotherapy. Along with these interests in a wide variety of cancer and tumor related research areas, I would also enjoy pursuing research on heart disease, stem cells, drug development, epidemiology, and other disease-specific research areas. After spending a year pursuing these research interests, I would like to attend medical school. I think the Postbaccalaureate IRTA program would be a great opportunity for me as someone who would like to take a year before entering medical school to expand my knowledge and to make a meaningful contribution to an area of science that is of particular interest to me.

Cover Letter 2

My research interest is in HIV/AIDS. I would like to continue getting higher degree in bioinformatics so I can develop up to date research skills. NIH is one of the leading institutions in genomic research therefore I would like to be part of this group.

Cover Letter 3

I am a very good listener; moreover, I believe that a good listener makes fewer mistakes in life. I am a very hardworking young man and I love working with different people; in fact, I believe in teamwork because I tend to learn more while working as a team. I am very observant; it helps me to gain more experience in any thing I set my hands to do.

My goal is to go into medicine perhaps a surgeon where I can use my hands and make money. I want to come to the NIH for the summer where I can learn the techniques that will help me in curing cancer.

Cover Letter 4

I am writing to apply for a position in the Postbaccalaureate Intramural Research Training Award Program at the National Institutes of Health. I learned of this opportunity through the Health Careers Office at X University, and my interest was piqued by discussion with current program participants. I am a 2007 graduate of the X chemistry department with classroom and laboratory experience focused in physical chemistry. As an aspiring M.D./Ph.D., my desire is to apply my strong knowledge of this field to an area of medical interest. I believe that the NIH, with its broad range of research topics and commitment to cutting-edge techniques, would provide the best opportunity for channeling my skills into this specialized area of medical research.

As a chemistry concentrator at X, I covered a broad range of course material, ranging from the physical to the biological. I spent four full years as a research assistant in a physical chemistry laboratory. Over the course of this position, tasks included optical alignment, x-ray and UV spectrometry, and liquid sample preparation. I also had the unique opportunity to prepare an optical arrangement for a project at the Y Linear Accelerator and to observe both the installation and data collection revolving around this setup. My summer position as an organic chemistry teaching assistant provided experience in organic syntheses and techniques. Biology courses introduced such techniques as DNA manipulation and extraction, cross-breeding of fly stocks, and obtaining physiological data. My wide range of laboratory experiences, paired with my long-term position in research, has made me a well-rounded researcher with the facility to learn new techniques.

My experiences as a researcher also vary widely with respect to personal communications. Interactions ranged from educating elementary school students to communicating on a personal basis with professors and graduate students in the laboratory. My time as a clinical researcher, as well as time spent shadowing a surgeon, has given me the opportunity to connect with patients and research subjects on a personal and information-sensitive basis. My wide range of interactions has given me the combination of confidence and compatibility necessary to work effectively with people in a research setting and maximize productivity.

I believe that my experience as a researcher and scientist would make me an asset to the IRTA program. I would appreciate an opportunity to discuss my qualifications as well as the best way to channel my experiences into the medical field. I am easily reached by cell phone or by e-mail. Thank you for your consideration, and I look forward to hearing from you.

ANGELICA MARIE GARCIA

STREET ADDRESS • CITY, STATE ZIP CODE
PHONE NUMBER • E-MAIL ADDRESS

Education

California State University, Long Beach (CSULB)

Majors: Biology, Option Physiology

Minor: Chemistry

B.S. - May 2007

Relevant Coursework

Molecular Cell Biology

Immunology

Research Methods

Mammalian Physiology (lab)

Genetics

Biochemistry

Biostatistics

Developmental Biology

Organic Chemistry (+ lab)

Renal & Respiratory Physiology

General Chemistry (+ lab)

Research Experience

2007 – present

Postbaccalaureate Intramural Research Training Award (IRTA) Fellow

National Human Genome Research Institute, Bethesda, MD

Rare inborn errors of metabolism. Dr. Meral Gunay-Aygun, Principal Investigator

2006 – 2007

Research Initiative for Scientific Enhancement (RISE) Fellowship Scholar

California State University, Long Beach, CA

Analysis of binding specificity and affinity of human anti-Candida antibody; collection and purification of Candida mannan. Dr. Mason Zhang, Principal Investigator

Summer 2006

University of Puerto Rico Research Program

Isolation of cancerous cells

Honors and Awards

2007-present

IRTA Post-baccalaureate Fellowship (NIH)

2007

NCAA First Team All-American Water polo

2006

NCAA Degree Completion Scholarship

2006

RISE Fellowship Scholar

2006

Dean's List

2006

Who's Who All-College Student

2004

MPSF First Team All American Water polo

2000-2004

MPSF Player of the Week

Professional Memberships

Member, American Association for Cancer Research (AACR)

CSULB Chicano and Latino Health Organization

Technical Skills

- Bacterial and yeast Isolation
- Antigen purification
- Gene Sequencing
- Tissue Culture
- Real Time Polymerase Chain reaction (RT-PCR)
- Gas Chromatography/Mass Spectrometry (GC/MS)
- Small animal research
- Analytical method development

Posters

Lai, Christopher C., El Kazzouli, Said, Phillips, Lawrence R., **Garcia, Angelica M.**, Marquez, Victor E., Kelley, James A.; Analytical Strategies for the Rapid Characterization of Diacylglycerol-Lactone Combinatorial Libraries Utilizing Mass Spectrometry. 55th Annual Conference of the American Society for Mass Spectrometry, Indianapolis, IN, June, 2007.

Adams, David, Edwards, Hailey, **Garcia, Angelica M.**, Font-Montgomery, Esperanza, Huizing, Marjan, Choyke, Peter, Heller, Theo, Mohan, Parvathi, Daryanani, Kailash, Guay-Woodford, Lisa, Gahl, William A., Meral Gunay-Aygun; Sequencing of PKHD1 in Autosomal Recessive Polycystic Kidney Disease/Congenital Hepatic Fibrosis (ARPKD/CHF). Annual Conference of the American Society of Human Genetics, San Diego, CA, October, 2006.

Conferences

Hermansky-Pudlak Syndrome Conference, Caguas, PR, fall 2007
American Association for Cancer Research, Washington, DC, fall 2006

Community Outreach

2007	NCI-Frederick Elementary Outreach Program
2007	Food & Friends Organization
2006-present	IRTA Post-baccalaureate Committee Member
2006-2007	Elementary Outreach Program/ 5th grade team
2003-2004	Frederick Memorial Hospital (FMH)
2003-2004	Long Beach Memorial- Children's Hospital
2003-2004	Clinical Care Extender- Hoag's Hospital (Newport Beach, CA)

Special Interests

Reading, water polo, dancing, swimming, travel, languages, and I like challenges

Languages

Fluent in Spanish; reading knowledge of Italian and Portuguese