The idea that “graduate school may feel like a high-pressure environment at the time, but once you get out you will realize it really was not” may initially seem counter-intuitive and, let’s face it, somewhat terrifying in its implications. After all, what could be more demanding than the seemingly endless struggle to produce data of publishable quality (and then repeat this miraculous feat- twice!), package it into a believable story to sell to our committees and, if we’re lucky, peer reviewers, while somehow also finding time to attend lab meetings, journal clubs, seminars, and various other mandatory activities- not to mention passing our classes? All the same, the never-ending list of tasks, responsibilities and challenges faced by Dr. Lorin Bachman on a daily basis just may lend some perspective to our oh-so-stressful existence.

As Associate Director of Clinical Chemistry at Virginia Commonwealth University (VCU), Dr. Bachman’s responsibilities go far beyond “just” overseeing the clinical chemistry lab of a major academic hospital. Her job description also includes consulting with clinicians on ambiguous or unexpected lab results, validating every new test or instrument to ensure it meets standards for clinical use, ensuring regulatory compliance with College of American Pathologists (CAP) guidelines, designing and validating new methods for clinical use, and tracking the performance of lab tests over time to facilitate comparison to results obtained by other labs around the country- just to name a few!

In addition, Dr. Bachman- who is also an assistant professor at VCU- has her own research project sponsored by the National Kidney Disease Education Program (NKDEP) and the International Federation for Clinical Chemistry (IFCC), and is the chair-elect for the American Association of Clinical Chemistry- not bad, considering she graduated from UVa (Ph.D., microbiology) just five short years ago. If, however, we were to take a moment to realize the years of hard work, dedication, and careful planning that went into jump-starting this ambitious career, we should not be surprised at the successful outcome.

Dr. Bachman, or rather Ms. Lorin Henrich at the time, came to UVa through the Molecular Medicine Ph.D. program. She had previously earned her B.S. in Biology, with option in Medical Technology, from Virginia Tech, where she graduated Summa Cum Laude in 1996, and then spent three years working as a Medical Technologist in a clinical lab before deciding to pursue a graduate degree. After successfully completing her course requirements, Ms. Henrich performed her thesis work with Deborah Lannigan, studying the regulation of Estrogen Receptor functions. Upon being awarded her Ph.D., Dr. Henrich wanted to participate in a Clinical Chemistry Fellowship Program- and was not deterred by the fact that UVa had no such program. Dr. Henrich – in collaboration with Drs. Duns and Templeton- simply founded the fellowship program, and was among the first Clinical Chemistry Fellows to complete the 3-year combination of clinical lab rotations and basic research. She then obtained board certification in Clinical Chemistry, which added one more bullet point to an already impressive
Mentor Spotlight, continued

resume- a resume which, by the way, also features her involvement in the Biotechnology Training Program.

This brings me, at last, to the reason I chose Dr. Bachman as this year's In the Spotlight scientist: she is a prime example of a highly successful BTP graduate, and I figured that as such, she would have plentiful- and directly relevant- advice to share with the rest of us. I was right. First and foremost, Dr. Bachman emphasized the need to survey the types of jobs we are interested in now, so that we become aware of the types of skills and experiences employers want to see. Then- and this is a direct quote- “do whatever it takes” to gain these skills. In her case, it required the creation of a brand new fellowship program at a large university- but often times, it can be as simple as auditing an extra course, attending a seminar series, or collaborating with carefully chosen colleagues. She specifically mentioned the externship experience offered through the BTP as a valuable opportunity to gain business and management skills in addition to learning new techniques in the lab. She stressed the importance of not limiting our education to science alone, but to dabble in a number of different skill sets, such as basic finance or personnel management- anything that will make us stand out from other job applicants. Again, she mentioned the importance of carefully choosing our externship, as it is uniquely suited to provide specific skills needed to land our dream job- often even leading to a direct job offer by the respective company.

In addition to obtaining the appropriate skills for a specific job, Dr. Bachman also emphasized the need for networking- on a personal, institutional, and national level. She recommended collaborating with other labs whenever possible, attending conferences, and getting involved in national organizations such as the American Association of Clinical Chemistry or an equivalent group. Chances are, there are lots of people who are qualified to perform a given job we are applying for- simply being one of them is often not enough. Having the proper connections just may help get your foot in the door.

In conclusion, I want to mention that somehow, in addition to jump-starting an extremely ambitious and rightfully successful career, Dr. Bachman still finds time for her husband, horses and pet parrot. So while life after UVa may not turn out to be the walk in the park we are all looking forward to, it is nevertheless promising that having a life outside the lab may still be in our future. Hope may also be found in Dr. Bachman’s summary of her Ph.D. experience: “You will look back on grad school and think it was excruciatingly painful, but in the end, it was worth it.”

Company Tour - Medimmune

- Paul Bonthuis

Last February, the BTP program made a three-hour early morning trip in two rented vans through the Washington Beltway traffic to the biopharmaceutical company MedImmune (http://www.medimmune.com) in Gaithersburg, MD. MedImmune focuses on designing biological therapeutics, such as monoclonal antibodies and fusion proteins. Their products include FluMist (inhalational influenza vaccine), Synagis (monoclonal antibody to prevent respiratory disease in children by the Respiratory syncytial virus), and Ethylol (cytoprotective agent to reduce cancer chemotherapy and radiation toxicities).

While at MedImmune, we had a full itinerary arranged by MedImmune’s Manager of Community Relations, Elizabeth Huntly, filled with speakers who manage diverse and essential operations to ensure a successful and viable company. The speakers gave us insight on the complexity and breadth of issues the company must tackle to bring biological therapeutics to market: from basic research, process plant development, to acquiring and protecting intellectual property. We discussed careers within the company devoted science, engineering, business, identification of new technologies for investment, FDA regulation, and patent law.

The highlight of the trip was the tour of the pilot lab where therapeutics are scaled up in large bioreactors to produce sufficient quantities of biologics to be used in various phases of clinical trial. The engineering complexity and stringent detail to aseptic design and protocol within the plant was a sight to behold. Some of us found the balancing act of suiting up in protective clothing to be an especially harrowing challenge.

The BTP field trip to MedImmune was not only enjoyable and educational, but also strengthened our ongoing relationship with the company.

New Student Dinner

- Rebekah Neal

When I asked Dr. Gordon Laurie the criteria for selecting the New Student Dinner speaker, he suggested the speaker should be an “accomplished member of the biotech community who can connect well with BTPers.” Fortunately for me, those words brought to mind the perfect candidate: Ian Ratcliffe, President and CEO of Stemgent, Inc.

Stemgent Inc. is a life science company focused on the development and sale of novel consumable reagents for use in stem cell
New Student Dinner, continued

research. Prior to this position, Mr. Ratcliffe worked for Upstate, both before and after their acquisition by Serologicals, Corp. He has a degree in Chemical Engineering from University of Surrey, as well as an M.B.A. from the Darden Graduate School of Business Administration at the University of Virginia. Mr. Ratcliffe is currently the Chairman of Enzymatics (Boston), a manufacturer of molecular biology reagents, and he is also a director of Global Cell Solutions LLC (Charlottesville), a biotech company commercializing proprietary 3D cell culture technology. In addition, he is a director of Asterand PLC (LSE:ATD) a leading global supplier of human tissue and human tissue-based research services for drug discovery. Mr. Ratcliffe is also a General Partner with Keswick Ventures LLP, Virginia.

I first met Mr. Ratcliffe at UVa, when he visited our lab to see some of our novel nanotechnologies, which led to offer to complete my BTP externship at Stemgent. I had the pleasure of getting to know Mr. Ratcliffe while I was exterminating at Stemgent. He generally spent a few days a week in Cambridge, a few in San Diego (which is where the other half of the company is located) and a few in Charlottesville, his home. He frequently interacted with the people in the company, on both the scientific and the business side, and encouraged social interactions as well. He was excited to come and talk to BTP about the biotech industry, and provided us a blueprint for what investors hear when we, as scientists, give presentations. Many students and faculty approached either Mr. Ratcliffe or I afterward and expressed their appreciation of his visit and the vast knowledge base he is helping to pass on to the next generation of entrepreneurs. After his talk, BTP students who had done externships in the past year briefly presented summaries of their experiences. These included Aaron Bailey, Rob Deitcher, Anna Hedin, Sarah Johnson, Rebekah Neal, and Matthew Oberhardt.

We all enjoyed a delicious dinner catered by Mona Lisa Pasta, organized by Mary Hall. A great time was had by all!

BTP Faculty Talks, continued

In order to cover a broad range of biotechnology topics in these talks, 4 BTP faculty members were carefully chosen from various departments to present/lecture BTP students and faculty. BTP members were also able to share their opinions and make suggestions for selecting specific faculty.

Professor James Landers presented his research in a talk entitled “Lab on a Chip”, and Professor Botchwey discussed the goals and challenges of tissue engineering. Professor Inchan Kwon gave a nice introduction to protein engineering, and Professor Michael Shirts described a model of “Computational Simulation for Drug Discovery”. The talks were well received by BTP members, and numerous questions generally followed the presentations, leading to more in-depth discussion of the topic.

Because biotechnology also includes food and agricultural applications, green energy production (Biofuels), and bioremediation in addition to biomedical applications, faculty studying some of these topics will be selected by BTPer’s opinions and discussions to share their research at the biotechnology talks next year (2010-2011).

Externship Experience - Medimmune

- Sarah Johnson

I chose MedImmune based on its proximity to Charlottesville and a recommendation from another graduate student who had previously externed there for 6 months. With the help of Prof. David Chen and Prof. Tim Redden, my CV was sent to MedImmune in July. Within a few months, I had the externship lined up for an early November start date.

Starting was easy. I worked in the formulation group, which performs stability testing of the protein compounds in different pharmaceutical formulations and delivery vectors. One ongoing project focused on predicting long term stability, or shelf life (usually measured on a scale of several years) on a much faster time scale (~hrs, weeks, months). The group had roughly 15 members, and they were helpful and great to work with.

BTP Faculty Talks

- Kyudam Oh

The Biotechnology Training Program (BTP) started organizing faculty presentations known as “BTP faculty talks” in order to facilitate interaction between BTP faculty and students, and to provide an opportunity to discuss current biotechnology research with our own experts in the field. The goal was that the various research topics taught by UVa’s faculty would aid all BTP members to gain a more complete understanding of the current state of biotechnology research.

Continued...
United Way Day of Caring

- Sarah Johnson

For the second year, BTP trainees participated in the United Way Laurence E. Richardson Day of Caring. The Day of Caring is a community wide event, organized by the United Way and designed to promote volunteerism while raising awareness of local service agencies and their needs. It has been an annual event in Charlottesville since 1992.

We helped clear brush, build a compost bin and a beehive for the Church of the Incarnation's project site. The site has three homes, one for the caretakers and two for families in transition.

http://www.dayofcaring.info/
BTP Minority Day
- Michael Stadnisky

The Biotechnology Training Program hosted its biannual Minority Day on September 23rd, 2008. The program hosted 10 students from Norfolk State University for a full day and evening of talks and shadowing. Visiting students learned about the graduate school application and interview process, spoke with current BTP students about their experiences, and had an opportunity to shadow current BTP students one-on-one. In addition, Gordon Laurie and David Chen, Director of the U.Va.-Coulter Research Partnership, spoke with students about opportunities in the biotechnology industry.

The day was planned and organized by BTP student Mike Stadnisky. Special thanks go out to the Director for Graduate Student Diversity Programs Cheryl Apprey who co-hosted the event with the BTP and local artist and graphic designer Michael Shveima for designing the logo. The day concluded with the annual new student dinner organized by Matthew Oberhardt.

Where Are They Now?

BTP Graduates

Tara Jones (2003) continues to work for Amgen in Puerto Rico. She was recently promoted to the Director of Purification Process Development. She summarizes her works as follows: my group supports harvest and downstream operations for 3 mammalian commercial processes. This includes troubleshooting issues, bringing new technology and new processes to the site, and developing and implementing process improvement project for the facility.

Erwin Gianchandani (2008) was selected as a 2009-2010 American Association for the Advancement of Science (AAAS) Science and Technology Policy Fellow, and has been working at the National Science Foundation in Arlington, VA, since September 2009. He also serves part-time as the Executive Director of BMEplanet, a global professional network for the bioengineering community (www.bmeplanet.org). BMEplanet launched to over 300 organizations in 44 nations in September.

Emily Cushnie (2008) is currently in medical school here at UVa, just finishing up her second year. She plans to graduate in May of 2012.

Michael Smith (2004) is an Assistant Professor in Biomedical Engineering at BU, where his research focuses on the importance of the ECM in tissue engineering.

Michelle Kofron (2007) is working as a Research Scientist in the Research Division at Globus Medical, Inc in Audubon, PA. She assists engineers in the development of products and investigating innovatory solutions for the treatment of spine diseases and disorders.

Rooshin Dalal (2007) completed his second degree (MD) in May of 2009. He is currently an intern at the Carilion Clinic in Roanoke, VA. He is moving to Los Angeles in June to start his radiology residency at the Harbor-UCLA Medical Center.

Patrick Martin (2003) is an Assistant Professor in the Biology Department at North Carolina A&T State University in Greensboro, NC. He has been awarded over $150K in pilot grants from the NIH and internal grants. He also was the first NCAT faculty member to be named Associate Member of the Wake Forest University Comprehensive Cancer Center. He also got married in 2003, and has a 3-year old son Patrick Martin Jr.