

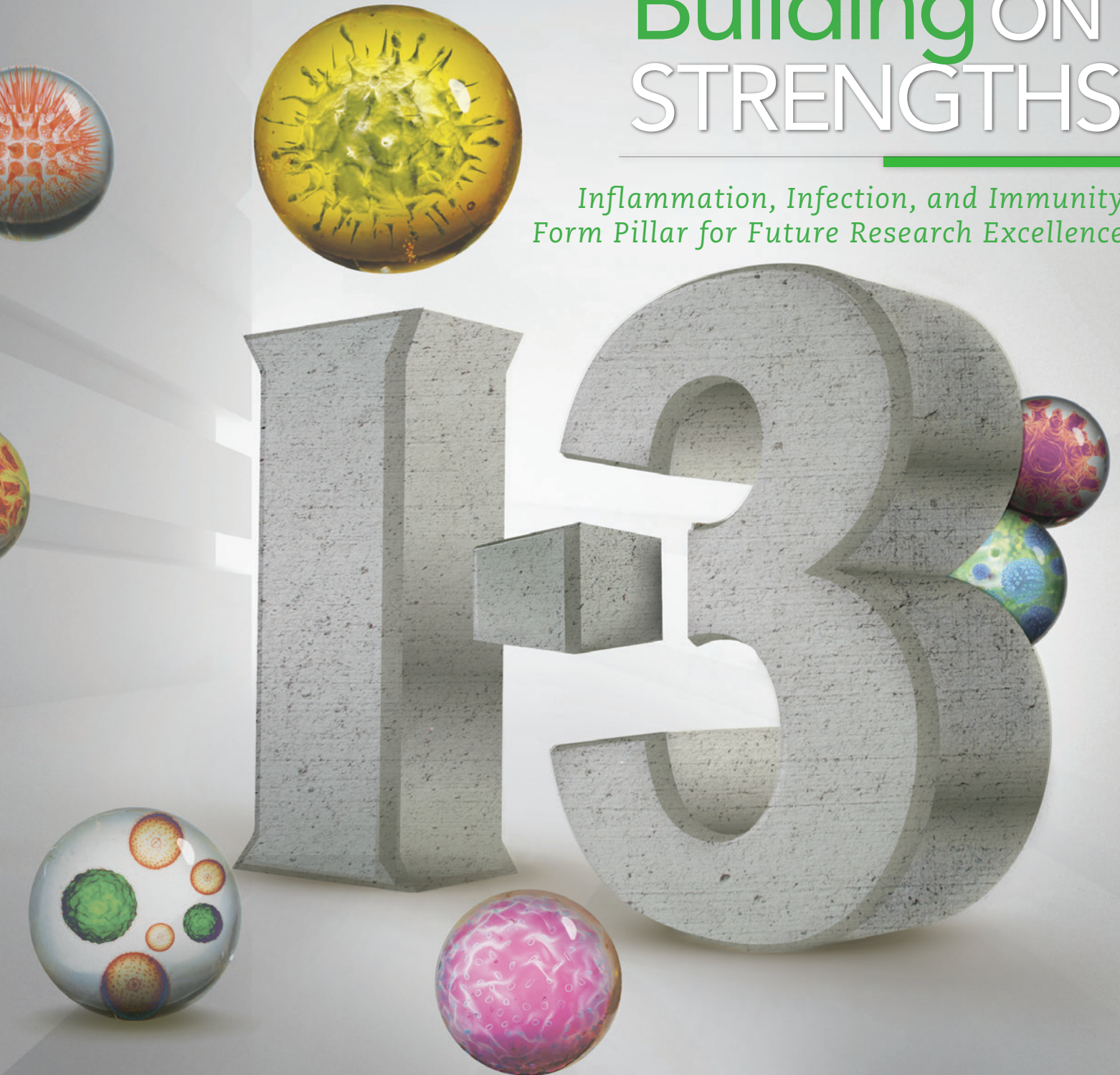
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Building ON STRENGTHS

*Inflammation, Infection, and Immunity
Form Pillar for Future Research Excellence*



Grow Your Own Scientists

Undergraduate Neuroscience Major Feeds UAB Research

By Jeff Hansen

Nine years ago, UAB created an undergraduate neuroscience major to link the medical and university portions of UAB and produce skilled, young researchers destined for medical school or top graduate programs—ideally, right here at the School of Medicine.

The idea originated with **J. David Sweatt**, Ph.D., the Evelyn F. McKnight Endowed Chair in the Department of Neurobiology, who at that time was being recruited to come to UAB from Baylor University. Sweatt had grown up in a modest family background near Montgomery, and now he wanted to “pay it forward” in his home state, providing “something for kids in high schools in the state of Alabama.” UAB leadership at that time, including School of Medicine Dean Bob R. Rich, approved the idea, and Sweatt accepted the UAB job.

Sweatt found an ally in **Carl McFarland Jr.**, Ph.D., then chair of the Department of

Psychology in the former School of Social and Behavioral Sciences (now part of the UAB College of Arts and Sciences), who had been thinking of such a program as well. “Carl was enthusiastic, and we decided we would go for it,” Sweatt says.

Sweatt and McFarland recruited **Anne B. Theibert**, Ph.D., associate professor in the Department of Neurobiology, to the leadership team and to develop the curriculum and program proposal. The goal was a program that would attract very bright undergraduate students, challenge them with tough courses, and teach the fundamentals of research as they worked alongside leading UAB neuroscience investigators.

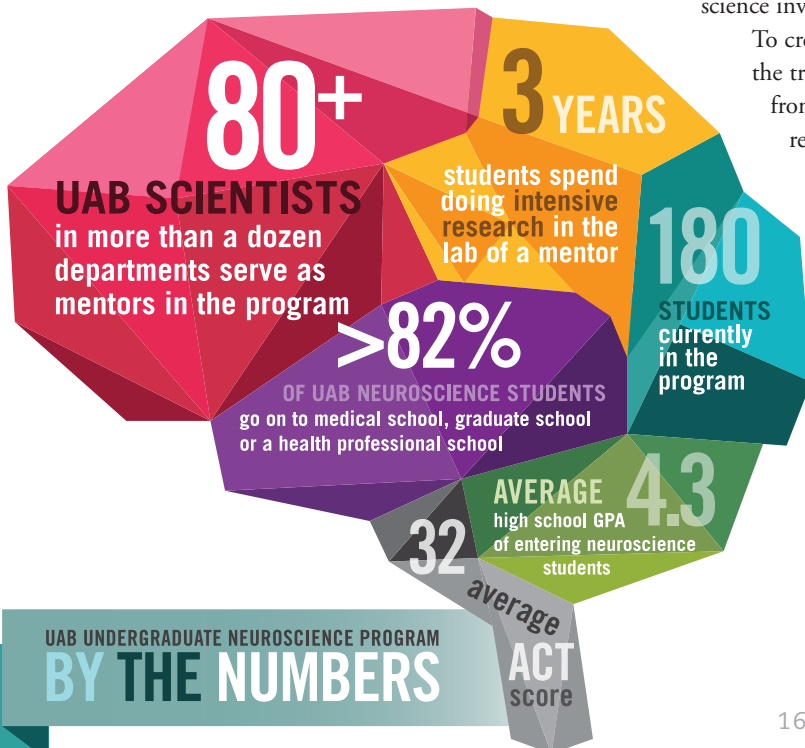
To create the program, the trio needed support from UAB neuroscience researchers unaccustomed to having undergraduate students work in their labs. They also needed to make UAB the choice destination for highly talented high-school students and their parents—students who could have their pick of any number of elite universities.

The results have exceeded all expectations. The neuroscience major is expected to grow to 180 students in the fall, all members of the UAB Honors College. From 2011 to 2015, 57 UAB students graduated with neuroscience majors. Entering neuroscience freshmen have average ACT scores of 32 and high-school grade points of 4.3 on a 4.0 scale. Seventeen neuroscience majors graduated from UAB in 2015, 10 summa cum laude and six magna cum laude.

These students are attracted by rigor—the demanding coursework and a required 15- to 30-page senior thesis. But the biggest draw—and the core of the program’s success—is the chance to work for three or more years in the labs of more than 80 world-class biomedical researchers in the School of Medicine who have volunteered as mentors. By the time the students graduate, many have published their own research and given presentations at national or regional meetings.

“More than 80 percent of our graduates have advanced to professional or graduate schools, including medical school and graduate programs in neuroscience, public health, pharmacy, physician’s assistant, or behavioral and physical therapy,” says Theibert. “This is what we strived for when we developed the integrated course and research curriculum—to help prepare and propel the next generation of clinicians, researchers, scientists, and health care professionals.”

McFarland retired in December 2014, and the neuroscience program continues under the long-time leadership of Theibert, the





Anne Theibert and David Sweatt



Student Q&A

Undergraduate Neuroscience Program alumnus **Austin M. Luker, M.D.**, one of the earliest undergraduate neuroscience majors, graduated from the School of Medicine in May and entered psychiatry residency at UAB.

How did you discover the program?

“I knew I wanted to go to medical school, and I initially declared myself a biology major. I very much enjoyed my early coursework in biology, but I wasn’t particularly passionate about it as a major. I heard about the neuroscience major from a friend, who mentioned Dr. McFarland as one of the key developers. I emailed him right away, and I spoke to him after class the next day, and he gave me everything I needed to apply. He was so excited and passionate about the program, and it was infectious. I am so grateful to him for taking an interest in me and getting me plugged in, because it changed my entire undergraduate experience for the better.”

Who was your mentor?

“My research mentor was **John J. Shacka, Ph.D.**, in the Department of Pathology. He was an excellent mentor and became a good friend through our two years working together. I ended up being on two publications from the lab, and presented posters around three times.

How did the neuroscience program prepare you for medical school?

“I feel like the neuroscience program really gave me the mindset of a basic scientist, which has been very beneficial in how I approach problems. The neuroscience program really develops critical thinking, which is invaluable for medical training. Neuroscience gives you a great background for medical school, regardless of your eventual specialty choice.”

Watch a video about the Undergraduate Neuroscience Major on **UAB Medicine’s iPad app.**

program director, and co-directors **Rajesh Kana, Ph.D.**, and **David C. Knight, Ph.D.**, both associate professors of psychology.

“While the student metrics are impressive and important in recruitment and outcomes, I am most impressed with the students themselves,” Theibert says. “I’ve really enjoyed teaching and interacting with this remarkable group. They are incredibly bright, motivated, mature, and well-rounded; they achieve academic excellence; they get involved in a variety of service and volunteer activities; and most have flourished in their research laboratories.”

Hard Work Pays Off



Ameen Barghi

One recent graduate of the program stands out, even in a program composed entirely of exceptional students: Birmingham’s **Ameen Barghi** was admitted to UAB’s Early Medical School Acceptance

Program, is an author on five peer-reviewed articles, and was selected as one of 32 Rhodes Scholars for 2015. He is interested in developing clinical imaging systems and software technologies that could allow for earlier diagnosis of progressive diseases. Barghi will complete a doctor of philosophy degree in clinical neuroscience at Oxford University.

“As a member of the neuroscience program, I had opportunities at my disposal that few, if any, undergraduates have,” Barghi

says. “I got the chance to work with world-class leaders in my field. From the very beginning, our students got a one-on-one experience with a faculty-level adviser, something unheard of in any other major.”

Mentorship is the foundation of the program, Sweatt and McFarland explained in an article for the Association of American Medical Colleges. A student doesn’t learn to be a scientist from taking lab courses, reading journal articles, or going to seminars, they say. Rather, a student learns to be a scientist through hands-on mentorship, “where the culture and reality of scientific research is acquired both directly and indirectly.”

Neuroscience as a Roadmap

With this neuroscience success, plans are under way to launch three similar undergraduate majors focused on cancer biology, bioinformatics, and pathogens, immunity, and diseases.

“The vision is to [catalyze] other programs that are equally successful and equally unique,” Sweatt says. “These sorts of programs are where UAB can be nationally and internationally known—by marrying the outstanding strength of the research labs and the research faculty in the School of Medicine with faculty in the College of Arts and Sciences who are accomplished teachers.”

“A program like undergraduate neuroscience is what makes UAB special,” McFarland says. “It’s taking full advantage of everything UAB has to offer.”