

# WORK HARD, PLAY HARD

*HHMI Investigator  
Nurtures Minority  
Undergraduates*

**B**rian Turner is a rising star. He has published three articles in the *Journal of Molecular Biology* during the past three years and was first author on the most recent, a 32-page review of the structural biology of HIV. The colorful figures he created grace the cover of the journal.

Turner isn't a Howard Hughes investigator, a MacArthur "genius grant" recipient, or even an up-and-coming postdoctoral fellow. He's a senior biochemistry major who does research in Michael Summers' HHMI laboratory.

He's also African American. And so are many of the other undergraduates in the lab.

Summers' lab at the University of Maryland Baltimore County (UMBC) is graduating nine seniors this year, seven of whom are African American. Five will enter M.D./Ph.D. programs, three will enter biomedical Ph.D. programs and one will seek an M.D. Six are Meyerhoff Scholars—recipients of a UMBC scholarship generally awarded to high-achieving minority students who will pursue graduate work in science, engineering, math or computer science.

"To be honest," says Chelsea Stalling, a senior biochemistry major who worked on research published last year in the journal *Science*, "it's unheard of for African American students to receive as many [graduate school] interviews as people in this lab have this year, and at many of the top schools."

Stalling will enter an M.D./Ph.D. program, although she hasn't decided which one. Like the others in her group, she has the envious task of choosing among such schools as Harvard, Yale, the University of Pennsylvania, Johns Hopkins, Columbia,

Washington University, Vanderbilt and the University of Chicago.

During the graduate school interview process, seniors from the lab were surprised to learn that their reputations often preceded them, and were also somewhat pleased at the mystique surrounding Michael Summers' undergraduates.

"The other schools can't figure out how he does it," says Turner, another future M.D./Ph.D. "At Yale, they wanted to know if it was something in the water."

How *does* Summers run an HHMI laboratory—one that has solved the structures of three of HIV's 14 proteins and discovered how one of those proteins interacts with RNA—and find the time to mentor undergraduates?

Granted, these seniors aren't just any undergraduates. Summers admits he might never have another group quite like this. Most have published scientific articles; three are first authors. Two have received HHMI funding for summer research projects. Several have done research overseas, studying diabetes in Israel or chemotherapy in France. Many tutor at inner-city elementary schools and volunteer at emergency rooms. And they still find time to take kickboxing classes or to go dancing.

But it's not just the seniors; Summers has 19 undergradu-

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Michael Summers (second from left) huddles for an impromptu discussion with students Brian Turner, Chelsea Stalling and Ryan Turner.



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ates in his lab this year, which he admits might be too many. He attracts new students every year and loses fewer than he gains, refusing to turn anyone away.

What attracts them? Summers credits HHMI and UMBC for the program's success. (This is apparently characteristic of him; his students say he's humble to a fault.)

"[These students] knew they'd have the opportunity to do hands-on research in the Hughes laboratory," says Summers. "So the laboratory is helping draw these kids to campus; that's a big plus. Hughes is providing the best resources so these students can get the best training."

Ryan Turner, Brian's lab mate and twin brother, says they were both drawn to UMBC by the lab and the chance to do research. Both were set to attend Duke—Summers says they'd already signed their housing forms—when UMBC President Freeman Hrabowski III brought them through the HHMI lab.

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"We were wowed by everything," remembers Ryan. "We started in the lab right away."

Danielle Smith, another senior, first heard Summers speak in a Chemistry 101 lecture. "He was showing protein structures that had been solved. I didn't even know you could do that kind of thing," says Smith. "The next semester I spoke with him about it, and he invited me to join the lab."

Ryan Turner and Smith, who will both attend combined-degree programs, were

co-first authors on a 1998 letter in *Nature Structural Biology*. They solved the three-dimensional structure of a protein that regulates metal toxicity in the yeast strain *Candida glabrata*.

"We were the first undergraduates to be first authors on a paper from the lab," says Ryan Turner. "We spent about a year and a half to two years on [the project]."

("One thing they left out," confides Brian Turner, "is that apparently this project had been passed down from graduate student to graduate student because no one could finish it.")

Summers introduces students gradually to lab life, providing relevant readings, then a tour through the lab, followed by immersion in the lab, preferably when classes are not in session. It doesn't matter if students have no knowledge of organic chemistry or have never seen a spectrometer. They learn quickly.

"We're expected to perform and do the work," says Stalling. "The work we do is the quality of work that professionals do. To



Although mentoring takes "a huge amount of time," it is worth it, according to Michael Summers, an HHMI investigator at the University of Maryland Baltimore County.

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me that’s amazing, but a lot of it is due to Dr. Summers. He recognizes that age isn’t limiting in science—it’s not like you have to be a certain age or possess a certain degree in

order to produce something meaningful or have a creative idea.”

Summers’ philosophy is to work hard and play hard. Groups from the lab go skiing and mountain biking and celebrate one another’s birthdays. Practical jokes are not uncommon. The lab feels like a large family.

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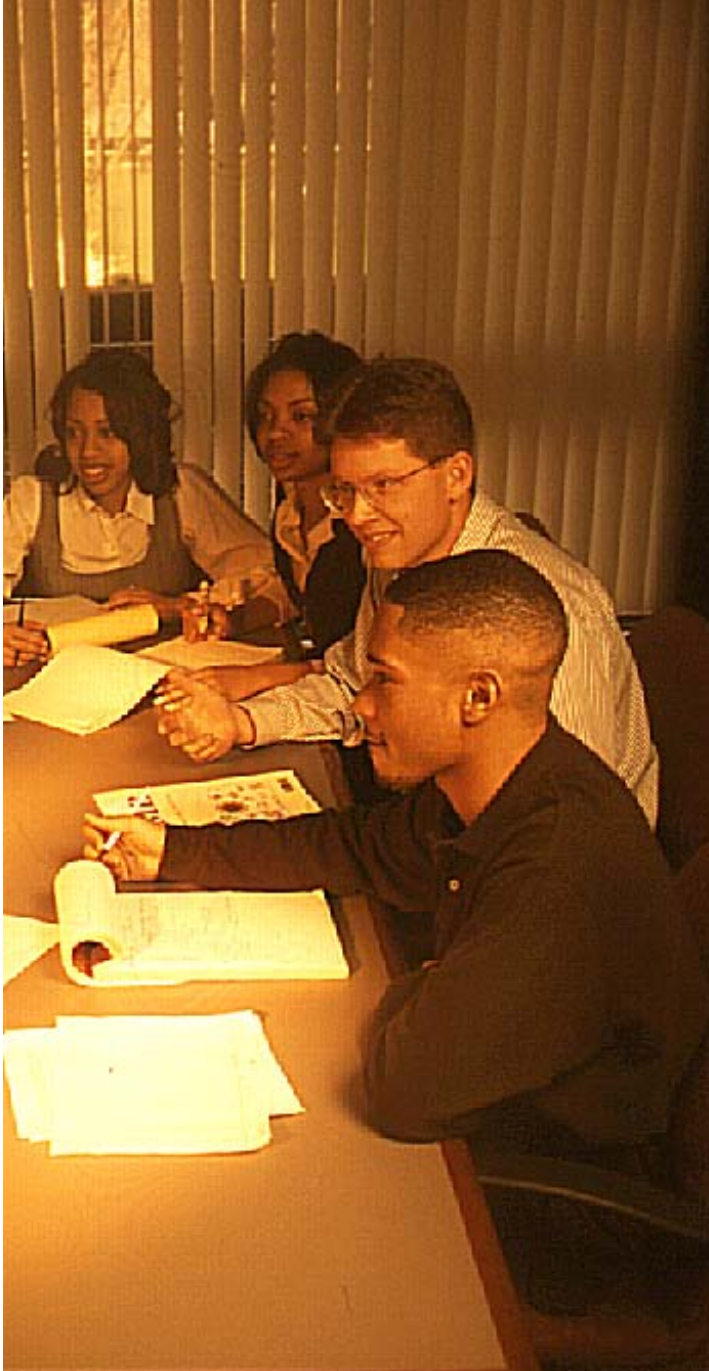
At conferences, Summers is famous for showing photos of his lab on one of their ski trips or spotlighting an undergraduate who contributed to his latest work. Ryan Turner recalls that at a recent award ceremony, Summers presented the research that had been published in *Science*. “At the end he said, ‘This is Chelsea Stalling; she’s a senior biochemistry major and she’s looking for good M.D./Ph.D. programs.’”

The students learn other things in the lab, things that go a bit beyond reading nuclear magnetic resonance spectra. “I learned that you don’t have to follow traditional paths,” says Stalling. “Just from seeing people like Dr. Summers, who is not in the least a traditional scientist, you learn that you can do what people say you can’t.”

Brian Turner echoes that sentiment and says his experience in the lab has left him determined to use his M.D. and his Ph.D. in equal measures. “Some people believe you can only do one or the other, but I was quite honest [in graduate school interviews] in saying I would try to contribute equal time to both. It can be done.”

Although mentoring takes up “a huge amount of time,” it’s worth it, Summers insists. “There’s nothing more exciting than coming in at 6:30 in the morning and finding students that have been here all night because after several months of effort, they’ve finally made a breakthrough,” he says. “Once they’ve started, they don’t want to stop, and they want to be the first to show it to me when I walk in the door.”

Then, this top-notch researcher of HIV structural biology says something you might never expect. “While I’m very proud of our research,” he allows, “it may be that in the end, what I do with these students is more important than what I do in the lab. Now I *hope* that what we do in the lab is really important and beneficial, but I *know* that what we do with the minority undergraduates is right and good.” And working. ■



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