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Mr. Speice

Independent Study and Mentorship

01 February 2019

Research Analysis and Applications Biochemistry

Assessment 14 - Interview

Name of Professional: Uttam Tambar

Title: Associate Professor

Company: W. W. Caruth, Jr. Scholar in Biomedical Research at UT Southwestern Medical Center

Date of Interview: 1/29/19

Works Cited: Tambar, Uttam. "Biochemistry Interview." 29 Jan. 2019.

Assessment:

The following interview was conducted with Uttam Tambar, an associate professor at UT Southwestern Medical Center, to get a better understanding of the research the Tambar lab group is performing and how the work of biochemists affects neighboring professions, such as a physician. By conducting this interview, I had the opportunity to visit a university laboratory and experienced working with other lab specialists as Professor Tambar introduced me to his lab members and equipment. In addition, this was my first college visit so I was able to survey classrooms and other research laboratories.

First and foremost, Professor Tambar touched on various research applications that he explored in his laboratory such as catalytic reactions, medicinal chemistry, and natural product synthesis. He addressed how in chemical research they develop new catalytic reactions, synthesize biologically active natural products, and collaborate with biologists to discover therapeutic agents. However, most of the terms were difficult for me to understand. Thus, Professor Tambar broke down each term and also showed 3D models of each molecule. For example, to define stereoselective, Professor Tambar created a model of an enantiomer. As a result, I was able to understand and connect my knowledge in chemistry classes to the molecules he was describing.

In addition to catalytic reactions, Professor Tambar also touched on natural product synthesis. Before the interview, I came across natural product synthesis as an area of interest in the Tambar lab. During the interview, I asked Professor Tambar to explain what this synthesis consists of. He described that isolation chemists found a new chemical made by plants called trigonolimine C. The Tambar lab took this chemical and analyzed it to find any medicinal applications of the chemical such as anti-HIV activity. I was intrigued by this new discovery as it gave an example of how biochemists explore new areas of research.

Other than catalytic reactions and natural product synthesis, Professor Tambar talked about medicinal chemistry and its future applications in biological chemistry. At the Tambar lab, they treat certain cancers such as kidney cancer and develop new drugs for diabetes. Such applications of biochemistry have sparked my interest in chemistry, knowing that the output of such research can make a positive difference in the lives of many.

As I continued the interview, I was able to understand Professor Uttam Tambar's passion for biological chemistry. His favorite part of working in a laboratory is learning something new every day and sharing that information with other colleagues and his students. In college laboratories, he was able to make connections from biological chemistry to the natural world, something I hope to accomplish in my Final Product. His passion for biochemistry has also sparked my interest in it. I hope to follow a similar path as Professor Tambar in interest to biological chemistry.

After this interview, I was able to connect my research and knowledge from previous classes to the information I learned during this interview. For example, I connected VESPR diagrams to 3D molecules and enzymes to catalytic reactions. For future references, I hope to build upon this interview and analyze other aspects of biochemistry that can help me with my Final Product.

01/29/19

Interview with Uttam Tambar at UT Southwestern

Chemical Research:

- Develop new catalytic stereoselective reactions, 3D molecules
- Synthesize Active natural products
 - enantiomers (make opposite copies)
- How are enzymes related?

- Cancer → medicinal chemistry
Ex. Kidney cancer and drugs for diabetes.

Natural Product Synthesis:

- synthesis of trigonellimine C

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- Chemical made by plants
- isolated by isolation chemists

Publications → stories we share with public

Why is chemistry/biology research intriguing?

- Learn something new every day
- Can affect patient care

Technologies: Fume hood, mixers, spectrography