

## FIRST PERSON

# First person – Ali Vural

First Person is a series of interviews with the first authors of a selection of papers published in Journal of Cell Science, helping early-career researchers promote themselves alongside their papers. Ali Vural is first author on 'Intersection of two key signal integrators in the cell: activator of G-protein signaling 3 and dishevelled-2', published in JCS. Ali is a Research Assistant Professor based in Professor Stephen Lanier's laboratory at the Integrative Biosciences Center, Wayne State University, Detroit, MI, investigating how the biochemistry of activator of G-protein signaling proteins is translated to a variety of functional roles.

### How would you explain the main findings of your paper in lay terms?

Cells are in constant communication with their environment. They are assaulted by a vast number of different kinds of signals. Therefore, they are equipped with special signaling systems to receive, integrate and process incoming messages and develop certain responses. The messages are received by a variety of antenna-like molecules located on the cell surface, named receptors, and are then transmitted into the interior of the cell. With the help of signal integrator molecules, the messages are converted to other modes, amplified and relayed to various parts of the cell, causing the cell to specifically respond with regard to the nature of the message. Our study, for the first time, reveals a coordinated interplay between the two signal integrator molecules, AGS3 and DVL2, which were previously described as belonging to two separate signaling channels. We think that our findings build a strong foundation for the next phase of studies needed to further understand the complex cross talk between intracellular signaling hubs. Such signaling mechanisms are strongly implicated in drug addiction and neuronal differentiation.

### Were there any specific challenges associated with this project? If so, how did you overcome them?

The ongoing challenge of AGS3 and DVL2 presenting as punctate structures is the enigma of their exact functional relevance. We predict that such punctate positioning is intimately associated with their multifunctionality, as well as occupying an essential nexus in cellular signaling networks.

### When doing the research, did you have a particular result or 'eureka' moment that has stuck with you?

I think such matchless moments are the ones that scientists live for, and their memories are mostly unforgettable given the high failure rate of the research business. I have had a couple of exciting moments, of varying degrees, over the course of my 15 year research career. I even have 'pseudo-eureka' moments during literature readings when I come across key data pointing me to a novel hypothesis or changing my experimental direction. Anyhow, my most unforgettable moment was when I first detected the cytosolic distribution of a particular point



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mutant of the AGS3 protein (AGS3-Q182H) tagged with GFP under the microscope. Wow! The subcellular distribution pattern was like a constellation of intracellular punctate structures in nearly all of the cells and totally different from that of wild type.

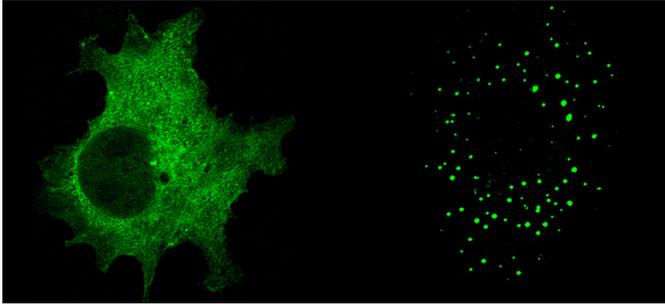
### Why did you choose Journal of Cell Science for your paper?

As I was going over the literature to set the stage for my previous paper, which was also published in Journal of Cell Science, I had come across a number of pioneering articles with respect to the characterization and regulation of Dishevelled puncta in the context of fundamental cell biology. Given the strong relation of my previous and current studies with those papers, and the established standards of Journal of Cell Science, we thought Journal of Cell Science would be a reputable platform to share our findings with a broad audience of cell biology researchers.

### Have you had any significant mentors who have helped you beyond supervision in the lab? How was their guidance special?

Over the years, I have had the chance to work with great people and receive mentorship from many. Two of the most remarkable of these are Professor Stephen Lanier and Professor Şükrü Sadik Öner. Their admirable stance and precious representation have taught me important life lessons, work ethic, hard work and ownership.

Ali Vural's contact details: Integrative Biosciences Center, Wayne State University, 6135 Woodward Avenue, Detroit, MI 48202, USA.  
E-mail: ali.vural@wayne.edu



**AGS3–GFP exhibits a constellation-like punctate distribution upon substitution of key residues.** Left panel, wild-type AGS3; right panel, TPR-modified AGS3.

**What motivated you to pursue a career in science, and what have been the most interesting moments on the path that led you to where you are now?**

I've always had a keen interest in life sciences and the working principles of living systems since I was a child. There are two defining moments in my career trajectory. The first was the booming of molecular biology and our entrance into a 'biology century' with the sequencing of human genome, which combined with my idealist aspiration to work on my uncle's genetic disorder prompted me to study molecular biology and genetics in college. The second turning point was at the beginning of my graduate life in New Orleans, which was hit by Hurricane Katrina at that time. As you might guess, it was not the best place and time to kick off a PhD. Nevertheless, there are

times in one's life that may seem unfortunate but bring something valuable and positive in essence. I got the chance to know Professor Stephen Lanier and his group, and embarked on research studying activator of G-protein signaling proteins.

**Who are your role models in science? Why?**

Regardless of the scientific discipline, just in terms of the general characteristics, I admire scientists who work on long-standing questions/subjects with great passion and that demonstrate sustained efforts in the long run towards finding answers.

**What's next for you?**

I am happy with what I have been doing for now, and can continue to do so for years, as long as the research budget permits. On the other hand, I also feel that the time has come for a transition to start my own lab and test my waiting hypotheses and ideas with a group of people all together.

**Tell us something interesting about yourself that wouldn't be on your CV**

I am a die-hard fan of Göztepe, 'the' football team of my hometown, Izmir. I always enjoy watching games with high-spirited supporters in a vibrant stadium atmosphere. I wish I hadn't missed the long-awaited (95 years) grand opening of Göztepe's new stadium.

**Reference**

**Vural, A. and Lanier, S. M.** (2020). Intersection of two key signal integrators in the cell: activator of G-protein signaling 3 and dishevelled-2. *J. Cell. Sci.* **133**, jcs247908. doi:10.1242/jcs.247908