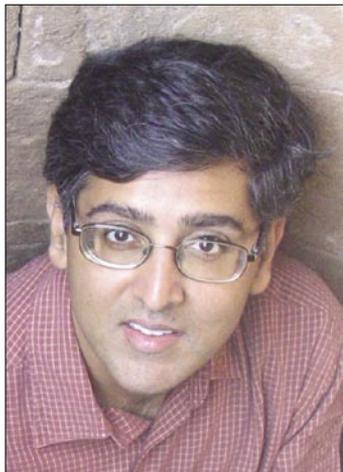


Arshad Desai



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Over the New Year's holiday, Arshad Desai went home for the first time in five years to Ahmedabad, in the Indian state of Gujarat. For Desai, it was a chance to see his family, show his wife, Karen Oegema, around his hometown, and introduce their two-year-old son Khalil to the exuberant chaos of India. "I really love India," Desai says. "When I go there, I always have a good time, but I can have a good time because my parents take care of all the ordinary things that you never think about here."

While home, Desai observed that India is really changing: "Just in the last five years, the changes have been especially dramatic. There's this weird paradox where highly educated, sophisticated people are doing really great work. Yet, there are still all these problems with things that you never notice here, like tap water," he says.

If India has changed dramatically since his last visit, so has Arshad Desai. Five years ago, he and Oegema were still postdocs in Tony Hyman's lab at the Max Planck Institute in Dresden, Germany. It was an anxious time, especially for a married couple. Would they get any job offers and, if so, would they be in the same place?

Today, both Desai and Oegema have launched their own labs at the Ludwig Institute and joined the Medical School faculty at the University of California, San Diego. Desai is also the Chair of the Local Arrangements Committee for the 2006 ASCB Annual Meeting, which will be held in San Diego for the first time since 1990.

Don Cleveland of Ludwig Institute recruited Desai and Oegema to San Diego in 2002. Cleveland says that he'd had his eye on Desai for some time. "I first became aware of Arshad while he was still a graduate student—for his work on what I thought was a landmark paper that he did with Tim Mitchison at UCSF," Cleveland recalls. Cleveland saw Desai at various meetings. Finally, when he heard Desai present as a postdoc at an international meeting, Cleveland decided it was time to put in a word.

"I realized that it was early in his postdoctoral career but I did want Arshad to know that when the time was right to let us know."

Cleveland also spoke with another postdoc in the same group. "She was also very impressive, so I asked her to keep us in mind," says Cleveland. "Of course, that was Karen," he continues. "I didn't know at the time that they were a couple. I was just looking for the next generation of stars in cell biology."

The new Desai lab at the Ludwig has hitched its star to the kinetochore, the "business" end of the mitotic spindle where microtubules take hold of the duplicated sister chromatids for the critical task of accurate segregation.

The work connects Desai's graduate work with Mitchison on microtubule dynamics to his postdoctoral fellowship with Hyman, when he began to focus on the kinetochore. In the Hyman lab, Desai simultaneously pursued a biochemical "bottom-up" approach in budding yeast to study the microtubule-binding interface of the kinetochore *in vitro* and a "top-down" approach to identify critical kinetochore components using RNA interference in *C. elegans* embryos. The RNAi technique uses double-stranded RNA as a

precision gene silencer, enabling the Hyman lab to sort through the entire *C. elegans* genome and comprehensively identify genes with roles in cell division. This approach has yielded a wealth of new connections between proteins, pathways, and phenotypes. Desai is most interested in connections affecting the kinetochore.

"The Desai lab brings something else to the kinetochore problem," says Claire Walczak. Now at Indiana University in Bloomington, Walczak has known Desai since graduate school days in the Mitchison lab at UCSF. "What I think has allowed Arshad to go a lot further with this (RNAi-based genetic screening) than anyone else is that he doesn't rely solely on it. Combining it with biochemical analysis of the complexes allows him to see what is going on when there are several proteins that function

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together. If there are four proteins assembling at the same time, Arshad can look more closely at those complexes and therefore understand mechanism along with assembly.”

Tony Hyman also thinks Desai has made a terrific start with his own lab. “He’s had several outstanding papers already, and he’s making great strides in understanding the kinetochore problem in *C. elegans* embryos.” Hyman also notes that Desai’s success is due to his multi-disciplinary approach combining biochemistry with RNAi-based genetic analysis in *C. elegans* as well as human cells.

Hyman points out that Desai has taken on this kinetochore problem from the very beginning. “He’s always been interested in it, and he’s kept after it with a single-minded focus on sorting out this problem,” Hyman says. “That’s such an important quality in a scientist. Arshad really wants to understand exactly how kinetochores work.” And, Hyman adds, “I’m sure one day, he will.”

The man who might unravel the kinetochore arrived in the U.S. in 1987 as a 17-year-old freshman at California State University, Hayward. Desai remembers his first experience of dorm life as a “major culture shock.” But he says that Hayward (now called California State University, East Bay) was a great place to get his bachelor’s degree. Most of the students, especially in Biology, were talented and dedicated. “A lot of people were going into nursing and there were even a few premeds,” he recalls. To satisfy the Biology Department’s general major requirements, Desai had to take courses outside his chemistry concentration. In retrospect, Desai says that his classes in ecology and botany gave him a broader perspective on organisms, one that he often finds lacking in today’s more narrowly schooled medical and grad students.

Desai’s future in science was sealed one day when he read a flyer on a department bulletin board, announcing the summer undergraduate program at Cold Spring Harbor Lab. The Cold Spring Harbor summer courses, guest lectures from prominent scientists, and a project in an x-ray crystallography lab with mentor Jeff Kuret fired Desai’s interest in structural biology and steered him toward grad school at UCSF. Once there, Desai was drawn into cell biology, after his first look at cells with fluorescently labeled microtubules in a microscope. His thesis work on microtubule dynamics in Tim Mitchison’s lab yielded his landmark 1999 paper on a new role for kinesin-family proteins as microtubule depolymerizing enzymes. Desai’s long hours at the bench also brought him renown at UCSF as

a member of the Mitchison “Late Night Crew,” although Desai says he’d always been a night owl. He explains that this rhythm dates to his days at home in Ahmedabad, where the summer heat is so oppressive that the city only truly wakes up after dark and goes all night.

While the Mitchison lab suited his internal clock, it rearranged Desai’s life in other ways. First, he started a relationship with a fellow night owl, UCSF graduate student Karen Oegema. Second, he began to experience the migratory nature of the modern lab. In the summers, Desai was the Mitchison lab representative at the Marine Biology Laboratory in Woods Hole, working with a team from Ted Salmon’s lab at the University of North Carolina. Desai credits both Andrew Murray (now at Harvard University) and Ted Salmon for exposing him to the wonderful scientific environment at Woods Hole and being important mentors throughout his career. In 1997, when the Mitchison lab moved cross-country to Harvard Medical School, Desai and Oegema relocated to Boston. In 1998, he and Oegema accepted postdoctoral positions with Tony Hyman at the European Molecular

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Biology Lab in Heidelberg, Germany. Two years later, they moved with the Hyman lab to the new Max Planck Institute in Dresden, Germany. Finally, in late 2002, Desai and Oegema landed together at the Ludwig Institute in San Diego.

Becoming a PI and a parent has changed his interests and his hours, Desai says. "I'm not doing all my own experiments anymore. Plus, I have a two-year-old son so I can't be on the Late Night Crew." Under his wife's influence, he has become something of a hiker. "For an Indian, I'm really quite outdoorsy," he says.

In addition, Desai is a self-confessed art film buff. "Part of my problem is that I'll watch just about anything," he admits. "But I really like older European art films like French 'New Wave' and Italian 'Neorealism' films. I also like older Indian movies. Not Bollywood—which I can't stand," he says, "but there is an older art film tradition in India that especially interests me."

As PIs, Desai and Oegema now have postdocs following them. Their first two were

Paul and Amy Maddox. Paul is in Desai's lab and Amy is in Oegema's. They all met at Woods Hole where the Maddoxes were in the Salmon lab contingent. Paul Maddox was still a Salmon lab technician that first summer and remembers talking with Desai about graduate school.

"We worked really late at night because of the nature of the experiments that ran for 12–16 hours," Maddox recalls. "So one night, it must have been three or four in the morning, I told Arshad that if he was a PI by the time I graduated, I would be his first postdoc. And then every year or so after that, Arshad would remind

me of that." In 2002, the Maddoxes, finally graduated, headed west to San Diego to take up their own double offer.

"It was worth the trip and the wait," says Paul Maddox. "Arshad has been a role model for me even before I started graduate school. This is a very young lab, but people have a lot of respect for Arshad, and they just want to do good things for him." He concludes, "I think that reflects on Arshad's abilities, not only as a scientist but as a friend and a leader." ■

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