

won silver at the Junior World Champions. In the 2009–2010 season, Zhang faced a number of issues. First, she changed coaches four times in one year, firing Li Mingzhu twice in the process. She also grew in height from 4'11" to 5'3". Zhang fell out of medal contention and members of the media questioned whether she would continue to compete.

Zhang committed herself to one year of intensive training under the direction of Peter Oppergard and Karen Wong. She returned to Skate America 2011 finishing sixth overall. At the 2011 Ice Challenge, Zhang won gold and shortly thereafter finished fourth at the 2012 U.S. Nationals. In February 2012, competing at the Four Continents Championship title in Colorado Springs, Colorado, Caroline won the bronze medal and her teammate, Ashley Wagner, took gold. It was the first time Zhang was on the podium for an international event since 2010.

Zhang deferred her plans for higher education to continue competitive skating. She is currently on tour with Skate America and continues to compete in preparation for the 2014 Olympic games in Sochi, Russia.

*Terumi Rafferty-Osaki*

*See also Yamaguchi, Kristi*

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## Zhang, Yitang (1955–)

Yitang Zhang is a Chinese American mathematician who catapulted from obscurity into professional and public prominence in 2013 with the publication of his research related to the famous "twin primes conjecture" in number theory.

Yitang Zhang was born in 1955 in Beijing, China, and went to the prestigious Peking University in 1978 shortly after Chinese universities started admitting students based on entrance examinations, rather than on political connections as had been done during the Cultural Revolution. Following graduation in 1982, he continued graduate studies in number theory at Peking University, earning a Master's degree in 1985 before moving to the United States to begin PhD work at Purdue University. Under the supervision of Tzuong-Tsieng Moh, a Chinese American mathematician originally from Taiwan, Zhang completed his thesis on the difficult Jacobian conjecture and received his PhD in 1991. However, in part because a theory he relied on in his work turned out to be faulty, Zhang failed to publish his thesis and secure a position in academia for many years. Instead, he took any job he could find, including working at a Subway sandwich store. "It wasn't bad," he later told a journalist, "but whenever I was doing it I was thinking about maths."

In 1999, with the assistance of two fellow mathematics graduates from Peking University—an engineer at Intel and a professor at the University of New Hampshire—Zhang returned to mathematical research and to academia with an adjunct teaching position at the latter institution. As a lecturer, Zhang had no access to many of the resources that a regular tenure-track faculty member would enjoy; however, the position freed him from the pressure to publish and allowed him to focus on important but difficult problem, such as the "twin primes conjecture." Simply put, the conjecture is that there exists an infinite number of prime numbers (numbers that can be divided only by one and themselves) separated by the number 2 (e.g., 3 and 5, 11 and 13).

When visiting a friend in Colorado in the summer of 2012, Zhang, after working on the "twin primes" problem for several years, suddenly had an insight that

proved key to tackling it. When he submitted his paper to the *Annals of Mathematics* in April 2013, it was immediately recognized by the mathematical community as a major breakthrough that might lead to the eventual proof of the conjecture. Based on the recent advances of several other mathematicians, Zhang has proved that there exist an infinite number of pairs of prime numbers separated by at most 70 million. So Zhang's paper was not quite the final proof of the "twin primes" conjecture, which requires that the pair of prime numbers in question to be separated by only two units, but it is widely believed to be a turning point toward that goal. The significance of Zhang's discovery and his dramatic personal journey helped make him the subject of international media attention in 2013 both within and without the scientific community.

Zhang's story demonstrates the emergence into professional distinction of a new generation of Chinese American scientists and engineers who came to the United States from mainland China at the end of the Cultural Revolution and who often had to overcome numerous obstacles on their way to success.

*Zuoyue Wang*

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## Zia, Helen (1952–)

Helen Zia is an award-winning American author, journalist, scholar, and activist. Born in Newark, New



Chinese American writer and activist Helen Zia. (AP Photo/Farrar, Straus and Giroux, Paul Kuroda)

Jersey, in 1952, she is the daughter of Chinese immigrants. Her father, Yee Chen Zia, from Suzhou, China, was a poet and scholar. Her mother, Belin Woo, was raised in Shanghai.

Zia graduated with Princeton University's first graduating class of women in 1973, where she studied at the Woodrow Wilson School of Public and International Affairs and was a Woodrow Wilson Scholar. A member of the Asian American Students Association, she was involved in campus political and social movements. From civil rights to Third World liberation and women's liberation, Zia found her voice as a college student. In the summer of 1972, she visited China with a small group of students as a goodwill gesture from the United States.

After college, Zia moved to Boston and enrolled in the Tufts University School of Medicine in 1974. She quit medical school a year later to pursue graduate studies in industrial relations at Wayne State University in Detroit. She worked as a factory worker for