

Accelerated Cure Project for MS

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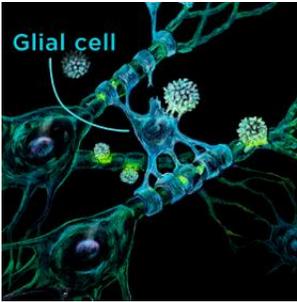
Accelerating research towards a cure for multiple sclerosis

The Towering Legacy of Ben Barres (9/13/54 – 12/27/17)

Dr. Ben Barres was an acclaimed Stanford neuroscientist whose research revolutionized our understanding of the structure and function of the brain. He not only changed the course of neuroscience, but he also cared deeply about other people and touched many lives. He was a beloved mentor to dozens of students and trainees, working nonstop on their behalf. As a result of his personal struggle with gender identity, and eventual gender transition, he was a passionate advocate for women in science. Along the way he also became a hero for people from gender and sexual minorities. His influential life was cut short when Barres lost his fight with pancreatic cancer at the age of 63.

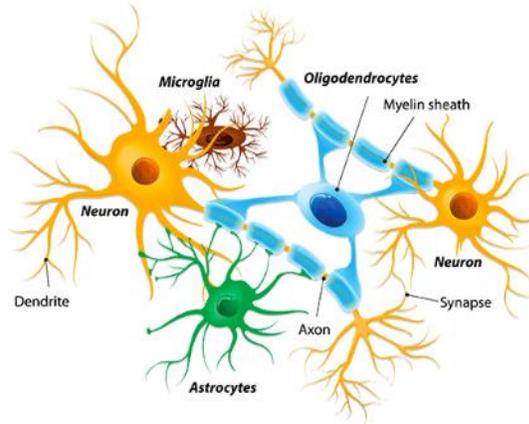


Ben was born Barbara Barres, one of four children in West Orange, NJ. His interest in science first manifested itself as a fascination with the [mad scientist](#) in the 1941 Superman cartoon. Dr. Barres decided he wanted to be a scientist before reaching his 5th birthday. As a child, he loved mathematics and science over dresses and jewelry. His parents simply saw him as a tomboy, but even as a very young child Ben felt that he was assigned the wrong gender. In his words, “Internally I felt strongly that I was a boy. This was evident in everything about my behavior.”



At school, the then Barbara Barres repeatedly requested, but was denied, access to courses in science and engineering. A summer science program with no gender restrictions at Columbia University finally allowed access to these subjects, and led him to pursue a Bachelor of Science degree (BS) in biology at the Massachusetts Institute of Technology (MIT), which he earned in 1976. In 1979, Barres completed a medical degree at Dartmouth College, followed by a neurology residency at Weill Cornell Medicine. While studying pathology specimens in the course of his studies, he was struck by the observation of large numbers of irregular-appearing [glial cells](#) near lesions in the brain. Prior to this, researchers believed these cells merely supplied stability and nutrients to the brain's neurons. He was intrigued that so many of the diseases that impair brain and nervous-system function involve glial cells, yet so little was known at the time about their biology. Frustrated at physicians' inability to provide cures or even to understand the causes of complex degenerative brain diseases, Barres left medicine to study glial cells further and, in 1990, earned a doctorate (Ph.D.) in neurobiology at Harvard Medical School.

As Barbara and as Ben, Barres' research led to numerous landmark discoveries. He had an almost superhuman work ethic, often working 18–20 hours per day. He was known by many in the neuroscience community as the “godfather of glia” for his pioneering research that inspired an entire field of scientists studying glia. During a postdoctoral fellowship at University College London, Barres worked with a team that was using immunological techniques to isolate three classes of glial cells. Working in this lab, Barres made new discoveries about the best-known class of glial cells, [oligodendrocytes](#). These fat-filled cells were already understood to wrap themselves around neurons, a process called [myelination](#), providing electrical insulation and significantly increasing the transmission speed and reliability of neuronal impulses. Barres showed, among other things, that electrical activity in neurons was necessary for their myelination. In 1993, he joined the faculty of Neurobiology at the Stanford School of Medicine and started his own lab. In 2008, he was appointed as the Chair of Neurobiology. At Stanford, Barres turned his attention to a second less understood class of glial cells known as [astrocytes](#). With his colleagues, he discovered astrocytes are key to the formation and activation of the connections in the brain responsible for learning and memory. Barres and colleagues also discovered that astrocytes cooperate with [microglia](#) (a third type of glial cell) in pruning those connections so the most useful ones remain. Barres' [most recent research](#) showed that astrocytes contribute to the death of injured neurons and other glia and these “destructive” astrocytes are more common in degenerative brain diseases like Alzheimer's, Parkinson's, MS, and Lou Gehrig's disease (ALS). This important discovery, published while Barres was undergoing chemotherapy, may provide opportunities for the development of new treatments for these diseases.



In his early work, Dr. Barres used samples from the ACP Repository for a study that focused on the role of the [blood brain barrier](#) (which prevents materials in the blood from entering the brain) in both the cause and progression of MS. He shared ACP's collaborative approach to research. Rather than jealously guarding his methods and data, he went to great lengths to make this information widely available to others working in the same area. In 2011, Dr. Barres co-founded a biotechnology company, [Annexon Biosciences](#), to translate these findings into drugs that could someday succeed in retarding or preventing the progression of neurodegenerative disorders.

Over the course of his career, Barres published 167 peer-reviewed papers. He organized and chaired numerous meetings, won many awards and served on the editorial boards of a number of distinguished journals, such as [Science](#), [Neuron](#), the [Journal of Neuroscience](#), [Glia](#), and [Current Biology](#). He was elected to membership in the [American Association for the Advancement of Science](#), the [American Academy of Arts and Sciences](#) and the [National Academy of Medicine](#). In 2013, Ben Barres was the first openly transgender scientist to be elected to the [National Academy of Sciences](#).

For the first three decades of his life, Barres struggled with the knowledge that he was a man living in a woman's body and became increasingly uncomfortable in his own skin. In 1997 (at the age of 43), Barres transitioned from female to male. He came out to his friends and family in an email, saying "I'm still going to wear jeans and t-shirts and pretty much be the same person I always have been, it's just that I'm going to be lot happier." He wrote a letter to his colleagues at Stanford University, signed his birth name, Barbara Barres, making it clear that he wished to be known as Ben from that point forward. His friends, family and coworkers responded with unwavering support. Barres' pioneering research continued to move forward after he came out as Ben. However, his transition caused some unexpected ripples.



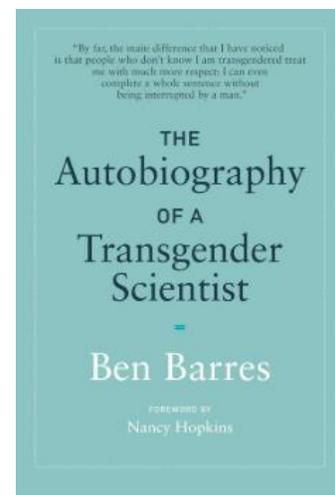
Barres, as Barbara, faced many challenges in the course of his academic and early scientific career, often stemming from being a female in a male-dominated field. For example, as an MIT undergraduate he solved a hard math problem that had stumped the rest of his virtually all-male class, only for his professor to suggest that his boyfriend must have done the work. While working on his Ph.D., he lost a fellowship competition to a male student who had published a sixth as many papers. During his decades as Barbara, Barres had known what this unfairness felt like, but he was unprepared for the drastically different treatment he got once he presented as a man. All of a sudden, fellow researchers began addressing him more collegially and treated him with more respect. On one occasion, after Barres gave a talk as Ben, he even heard an audience member remark, "Ben Barres gave a great seminar today, but then his work is much better than his sister's." He was angered by the chauvinism in many scientific institutions. Having lived both gender roles, he understood the pervasiveness of sexism and had a unique perspective on how to effect change.



Barres devoted much of his last decade to [publicly describing](#) the challenges he had faced as female in science, and offering ways to correct a system that he viewed as fundamentally biased against women and minorities. He worked relentlessly to improve the representation of women in all areas of science. He fought tirelessly for policies to protect women from sexual harassment and refused invitations to institutions with extremely poor gender ratios. He frequently interrupted his own keynote speeches about glia to talk about the inherent prejudice in science and barriers that keep such groups from succeeding in their careers.

Barres was a brilliant scientist who made it possible for others to shine. Barres considered his students and postdocs as if they were his children. Seeing them flourish and succeed was one of his greatest sources of joy. He went out of his way to mentor dozens of students and postdocs, stepping aside so they could blaze their own trails without having to compete with him. Barres' lab meetings were legendarily intense and well attended, often lasting more than three hours, during which he covered a wide variety of topics and encouraged open, spontaneous discussions. Ben's devotion to his trainees is evidenced by the fact that he spent the final days of his life writing and updating dozens of letters of recommendations for them in anticipation of their future career developments after his death.

In April 2016, Ben was diagnosed with advanced pancreatic cancer. He was remarkably brave and philosophical about his illness and his life. In his words, "I lived life on my terms: I wanted to switch genders, and I did. I wanted to be a scientist, and I was. I wanted to study glia, and I did that too. I stood up for what I believed in and I like to think I made an impact, or at least opened the door for the impact to occur. I have zero regrets and I'm ready to die. I've truly had a great life." Barres succumbed to his illness in December 2017. His memoir, [The Autobiography of a Transgender Scientist](#), documents his extraordinary life story. Much of the book is rightfully devoted to Ben's scientific achievements, punctuated by intensely difficult moments. Also included is an account of Barres' dogged advocacy, both for mentoring young scientists and helping women in science. One section of Barres' memoir lists his trainees along with the positions they held in 2017. Many of them went on to be leaders in their fields, which is a testimony to the powerful impact of Barres' efforts on their behalf.



Ben Barres left behind what some describe as a "[towering legacy of goodness.](#)" Many doors have been opened, thanks to his keen insight, humanity and courage. He was a beloved mentor to more than 40 trainees. His heartfelt efforts to promote equity and diversity in science touched many lives. His landmark work inspired an entirely new field of research into the role of glial cells in neurodegenerative brain diseases. As a result, researchers now have a better understanding of the mechanism of myelin destruction and repair, making the discovery of a regenerative therapy for MS more plausible.