

Neuroscience for Kids



A Career in Neuroscience: A Game of "Survivor?"

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I admit it. I watch "Survivor," the TV game show that strands 16 people in the middle of nowhere. These contestants must work together to find food, build shelters and compete for rewards. Every three days, "members of the tribe" vote one person out. The last person remaining wins one million dollars. Many aspects of *Survivor* remind me of life as a research neuroscientist.

Abandoned in the Wilderness

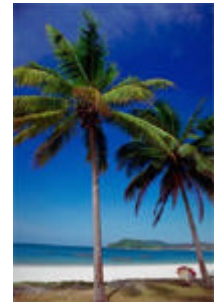


Although neuroscientists are not abandoned on a deserted island, banished to the Amazon jungle or stranded in the Australian outback, they are placed in laboratories where they are expected not only to survive, but also to thrive. If they are lucky, neuroscientists arrive in their labs with more than the one luxury item that TV's survivors can take to their new homes. Sometimes neuroscientists inherit lab space and equipment from scientists who have retired or moved to different jobs. Many are provided with start-up money to stock their labs with equipment and supplies. To thrive, scientists must become leaders and attract graduate students and post-doctoral fellows to come to their lab to join in the experiments and activities. As in *Survivor*, different people have different skills, and the scientist's job is to match projects with people who 1) have an interest in the subject matter and 2) have the skills and attitude to work on certain projects.

Scientists must also know how to motivate people. The scientist's success and reputation are based on the work of the lab, so the scientist must know how to get people to work more efficiently: when to push people or when to encourage and praise.

Teamwork

When the TV survivors arrive at their new locations, they must build shelters to protect themselves from the weather and find food to nourish themselves. Scientists often find themselves in a similar situation. They may not have to search further than a cafeteria for food, but their laboratory may not have the necessary equipment, chemicals, computers, and other supplies for conducting experiments. In addition to attracting graduate students and post-doctoral fellows, neuroscientists usually recruit additional



personnel such as technicians to help with lab work. Both survivors and neuroscientists depend on others and it is important that everyone get along so they can get their work done.

Teamwork is important for people on deserted islands and for people in

laboratories. *Survivor* team members must use teamwork to compete in games that involve hunting for clues and answers or navigating obstacle courses while tied together. These competitions require that everyone on the team cooperate. Cooperation is essential in the lab too. Different members of the lab team may have different responsibilities. For example, the technician may prepare the set-up for an experiment and assist graduate students. After the initial preparation is completed, other neuroscientists may collect data. After people obtain their results, everyone discusses the findings, brainstorming to figure out what they mean and what to do next. Different tasks are assigned to different people so that the experiments will be successful.

Challenges

Island and outback survivors compete for rewards such as blankets, tools and food. They may have to outlast other competitors by standing on poles or by eating a mangrove worm. Neuroscientists compete with each other for rewards too (but they don't have to eat any worms). One of the biggest rewards for a neuroscientist is a research grant: this is money to buy equipment and supplies and to hire people to work. To get such a grant, a neuroscientist must write a successful application and compete with other neuroscientists who are also trying to get research funding. The largest funding agency for scientists in the United States is the National Institutes of Health (NIH). The NIH has a total budget of approximately \$29 billion and a portion of this is set aside for neuroscience research. Although the NIH budget may appear large, not all projects that people propose are funded. Scientists compete with one another for the same research dollars and many projects are never funded.

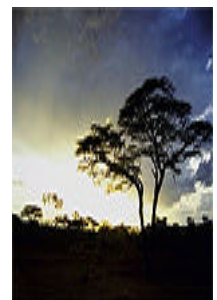


Scientists working in universities are in sink-or-swim-situations. They are given a lot of freedom (there is no time clock to punch in and out), but they are judged by their results. This includes the number and quality of papers they publish and research grants they obtain. If they don't have any publications, they most likely will not get grant money -- this is like being voted off the island. Writing a successful grant application is perhaps the biggest challenge for neuroscientists. It also comes with the biggest reward. A successful application requires meticulous planning, careful background research, and clear writing. Grant reviewers read and rate grant applications asking questions such as:

1. Does the study address an important problem?
2. Are the methods to be used appropriate?
3. Is the study novel -- that is, does it break new ground?
4. Are the personnel trained properly to do the experiments?
5. Does the scientist have adequate resources to do the experiments?

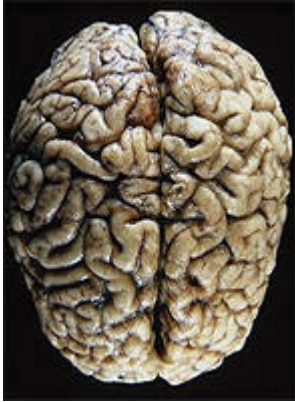
Unlike island/outback survivors, neuroscientists do not win blankets, matches or food for winning a challenge. Rather neuroscientists win a grant that allows them to get the resources to continue their research.

Neuroscientists compete against each other in other ways. Sometimes different laboratories race against one another to report a new discovery. The first lab to report the discovery gets the credit. Just like island and outback survivors, neuroscientists find little reward in second place finishes. Labs may also compete over personnel.



Promising graduate students or post-doctoral fellows with special skills may be recruited by lab directors who "steal" these people from other universities by offering more money or other benefits. Even within a university or a department, scientists may compete for personnel or laboratory and office space.

Immunity



To stay in the television game, survivors must avoid being voted out. One way to avoid banishment is to gain "immunity" by winning an immunity challenge. Gaining immunity means that survivors cannot be voted out of the game at the next voting session. For scientists, immunity is *tenure*. A scientist who gets tenure has a job for life and cannot be fired without an exceptional reason (e.g., criminal activity or incompetence). The criteria to determine who gets tenure vary among universities, but usually include the number and quality of publications, the success of grant applications, teaching evaluations, public service and letters of recommendation. Without tenure, scientists are vulnerable to losing their jobs. Some scientists cannot even compete for tenure because they are in "non-tenure track" positions -- jobs where tenure is not an option.

These scientists pay their own salaries and support their laboratories with grants. Without a grant, these researchers lose their jobs. In other words, without a grant, these researchers can be voted off!

The Prize

Neuroscientists are not competing for a million dollars. Most have selected their careers because they enjoy their work and take pride in contributing to our knowledge about the nervous system. This cannot be measured in dollars and cents. Every experiment reveals something new, something to wonder about and to investigate further. It's the thrill of revealing something no one has seen before that drives many scientists...perhaps something that holds the promise of helping someone stricken by a neurological disease or that explains how the brain works. That's the prize. For those who have chosen to play the research neuroscientist "game," the rewards are worth the challenges.

(October 13, 2005; <http://faculty.washington.edu/chudler/survive.html>)