researchers eager to work with that agency could benefit. Bodrov solved a challenge for NASA on keeping food fresh in space, and he is now an independent scientific consultant for the chemical industry. He is also an entrepreneur: the approximately $160,000 that Bodrov earned from solving 16 challenges at InnoCentive and IdeaConnection has helped him to launch a start-up that develops nanomaterials for drug delivery in Saint Petersburg, Russia.

Jeffrey Davis, director of NASA's Space Life Sciences Programme at the Johnson Space Center in Houston, Texas, says that the agency liked Bodrov's food-packaging idea because it used a flexible graphite material — a solution perhaps familiar to materials scientists, but one that the food industry would not have generated. NASA is now looking at creating its own problem-solving framework, blending open-innovation challenges with traditional grants, contracts and small-business proposals, says Davis.

Davis says that accessing open-innovation channels was easy. "But there was a psychological barrier to admitting we couldn't find the answers ourselves," he says. This is not uncommon. Hesitation to accept outside inventions — a 'not-invented-here' stigma — is one of the major obstacles for open-innovation mechanisms, says Wim Vanhaverbeke, a professor of business studies at Hasselt University in Diepenbeek, Belgium. Companies must confront the same barrier. "They need to forget the idea that their only mission is to protect inside inventions and adapt to work with external ideas and inventors," says Vanhaverbeke.

The open-innovation approach continues to evolve. IdeaConnection, formed in 2007, is attempting to form teams of solvers using the extensive information collected in their online applications; each team member receives equal compensation if they win the challenge. Although teams composed of members with complementary backgrounds might have a better chance of solving challenges, efficiently communicating ideas between disparate members can be a challenge — something team facilitators attempt to address. InnoCentive, meanwhile, is creating a sort of 'dating site' for scientists, so that they can choose who they want to work with.

Karabulut says that the open-innovation strategy still has plenty of room to grow, "I don't know any better way for 'seekers' to find global talent for very specific challenges," he says. The thrill of winning continues to be a big part of the appeal. "It is one thing to win a cash reward," says Errami. "But it is quite a feeling to win a challenge." ■

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COLUMN

Confessions of a procrastinator

Everyone puts off big tasks with smaller ones, and the only solution is to fight fire with fire, says **Fabio Paglieri**.

In a memorable passage from Jerome K. Jerome's 1889 novel *Three Men in a Boat*, the narrator diagnoses himself with nearly every possible ailment after leafing through a medical book found in the British Museum. Psychology researchers such as myself are prone to a special brand of hypochondria: like Jerome's character, I cannot help but wonder whether I suffer from some of the psychological shortcomings that I observe each day in the lab.

My work studying how people schedule various tasks over time (usually inefficiently) has shown me the error of my own organizational ways, and now I know the name of my terminal illness: procrastination. I am always struggling to stick to multiple deadlines on the most disparate jobs. For every project with a deadline that I manage to meet, there are two more that I am forced to postpone. I am a pathological procrastinator.

For some time I thought I was alone in my depravity, and I laboured to keep it hidden from family, friends and co-workers. Then it dawned on me: procrastination is no exotic malaise, but rather a pandemic virus, one possessed of alarming virulence in the research community. Colleagues never tire of mentioning 'bottomless to-do lists', 'overwhelming commitments', 'busy schedules' and 'pressing deadlines'. Such symptoms can result in students failing to deliver data, a co-author unable to complete a paper or a publisher postponing a manuscript's publication. Clearly I am in no position to judge, as I myself have committed similar misdeeds. I take some heart in sharing the guilt with so many others.

How might young scientists manage to avoid wrecking their careers despite such a character flaw? Procrastination often stems from over-commitment, so simply taking on fewer obligations might solve the quandary. But this is easier said than done, especially for a postdoctoral researcher. One never knows which project might turn out to be a means to new career avenues or to tenure. And by the time one realizes that a new task is just another time-consuming burden, it is often too late to retreat without repercussions.

I was about to give in to despair and start roaming the self-help aisle of my favourite bookstore in search of a cure when I found a possible solution at structuredprocrastination.com. On the site, John Perry, a professor of philosophy at Stanford University in California, notes that procrastinators are never really idle; instead, they work on something in order to put off doing something else. According to Perry, you can make procrastination work for you. Just convince yourself that there is something really complex and important that you intend to do (say, write a full monograph on your favourite research topic), and your procrastination instinct will immediately drive you to do other tasks as a way of putting off working on your big project. The trick is to make sure that these other tasks are productive and not a waste of time. The bigger your ultimate aim, the more likely you are to take part in useful procrastination chores such as running experiments, tutoring students, writing articles or going to conferences.

If Perry is right, you don't have to conquer your base procrastination impulse to progress in your professional life. True, a modicum of self-deception is required for the strategy to work. But fortunately, procrastinators are skilled self-deceivers anyway.

Will it work? It has for me so far. I have managed to diligently complete many small but important tasks as a way of putting off other impending obligations. And, unfortunately, the alternative is to conquer procrastination by sheer willpower, which is something that humans just aren't very good at. ■

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