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A fresh start for medical education

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ONLINE EXCLUSIVE

At a weekend-long workshop in May, leaders from the Union of Medical Care and Relief Organizations and the Syrian American Medical Society worked with Yale medical and public health faculty to find ways to support the Free Aleppo University (FAU) Medical School in Syria through textbooks and online resources.

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schools of medicine and public health or Yale New Haven Hospital to discuss their work. “It really puts all the paperwork and day-to-day stuff into perspective,” said Katie Hart, senior administrative assistant in the library. “Working at a medical school, you know you have some bearing on the clinical practice, but to have people come in and tell us how they’ve used the library for their own research—that’s really meaningful.”

Gallagher’s unforeseen career path is a message he has tried to pass along to his daughters as they consider college. His second-youngest is interested in psychology, but she also loves music. His advice: “Keep your options open, because you never know just how much you might enjoy something. Connect what you do for work with something you love.”

Gallagher’s flexibility in his work life has helped him think innovatively about the trajectory of libraries in a modern digital world. While many people see libraries as old-fashioned, Gallagher looks at them differently. “I’m not worried about the future of libraries. We evolve,” he said. “We have a really talented staff who constantly look for opportunities and novel ways to best assist our users.” While information has gone from print to digital, Gallagher said that librarians are still needed to organize, preserve, curate, and disseminate information.

Even the physical space of the library holds a sense of magic to Gallagher. He sees the library as a place of refuge for users from the often hectic and overwhelming world of medicine. “As amazing as the Yale University Library is, it’s wonderful to be connected with something as special as the Yale medical center,” he said. “With health care, you’re engaged in something fundamental, and librarians have so much to contribute to the medical center’s missions.”

When you ask the people Gallagher works with to describe him, words like “focused,” “motivated,” and “vision” come up frequently. But perhaps the best description of what makes Gallagher such a great leader comes from Grafe: “Sheer charisma,” she said with a chuckle.

—Sarah Faulkner



A Yale pharmacologist pursues the therapeutic potential of a psychedelic drug

Pharmacologist Gary Rudnick, Ph.D., names coffee as his personal drug of choice. He’s spent most of his career studying the serotonin transporter, a regulator of neuronal signaling, which is inhibited by such drugs as the antidepressants Lexapro and Prozac. But in the last few years, his research has led him to probe the pharmacological potential of a drug off the beaten

path: the hallucinogen ibogaine, which is illegal in the United States. Its medical appeal? Anecdotal reports suggesting that the drug can help opiate addicts kick their habits.

Rudnick “met” ibogaine, in a research sense, through serotonin, the neurotransmitter that passes signals from neuron to neuron in the brain, and the serotonin transporter, which is the focus of his research. The transporter stops serotonin’s signal by pumping the neurotransmitter from the synapse, where it is active, back into the neurons that release it. Like Lexapro and Prozac, ibogaine inhibits the serotonin transporter.

“When I found out that there was an inhibitor of the serotonin transporter that had sort of an interesting pharmacological past, I thought it would be interesting to investigate it,” said Rudnick, a professor of pharmacology. Now he is working to develop ibogaine-based drugs that might have therapeutic uses.

Ibogaine’s “pharmacological past” goes back to the 1960s, when 19-year-old Howard Lotsof was traveling the world and taking mind-altering drugs. He had developed an opiate addiction and landed in the Central African country of Gabon, where native people used ibogaine in a coming-of-age ritual that Rudnick refers to as a “psychedelic bar mitzvah.” After taking the drug—probably in the form of the mashed root of the plant *Tabernanthe iboga*, from

which the drug is derived—Lots of reported that he no longer craved heroin. He spent the rest of his life advocating for ibogaine as a cure for opiate addiction.

In the years that followed, Lots of and others had successfully treated opiate addicts with ibogaine in countries where the hallucinogen is legal. One study estimates that as of 2006, 3,414 people had taken ibogaine, most of them to treat opiate withdrawal (others took it to treat other addictions; some took it for spiritual or other reasons). However, there were also deaths associated with ibogaine ingestion. Though it was unclear whether ibogaine caused the deaths, Rudnick said, “the whole treatment process and ibogaine got a bad name from this, and it made it even harder for people who were trying to study it seriously.”

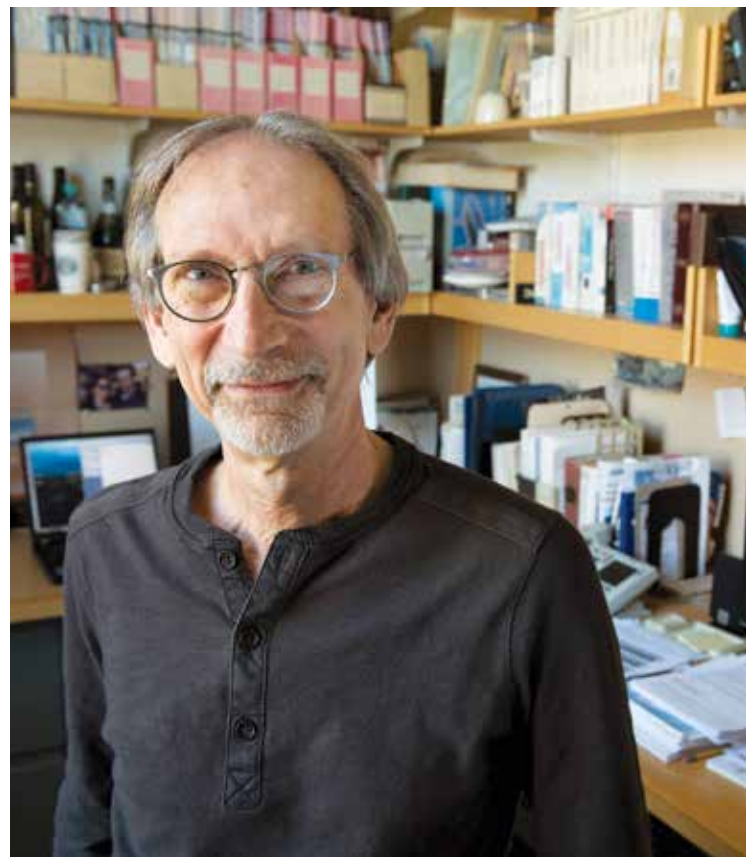
Ibogaine’s status as a Schedule I drug in the United States—which means that it is illegal, has no accepted medical use, and is thought to have potential for abuse—only adds to that difficulty. However, Stanley Glick, M.D., Ph.D., professor emeritus at New York’s Albany Medical College, said it’s unlikely that ibogaine is addictive. “Most people report [taking ibogaine] as a rather unpleasant experience,” said Glick, who began researching ibogaine after Lots of contacted him and touted its potential. Unpleasant how? In addition to inducing hallucinations, ibogaine can slow the heart, hamper

muscle coordination, and cause nausea and vomiting.

Perhaps due to these obstacles, there have been no placebo-controlled trials of ibogaine’s therapeutic effectiveness in humans. Glick calls this lack of clinical testing “a real tragedy,” adding that “the anecdotal evidence can only go so far. ... It does not constitute scientific proof.” There has, however, been promising animal research on ibogaine. Glick has reported that ibogaine eased the symptoms of rodents withdrawing from the opiate morphine, and also reduced animals’ appetites for a variety of drugs.

Rudnick found that ibogaine interacts with the serotonin transporter in an unusual way. All currently approved serotonin transporter inhibitors jam the transporter’s opening and block serotonin’s binding. Rudnick found that ibogaine blocks the transporter in another orientation, in which it is open to the inside of the cell. “Drugs that inhibit the transporter by a different mechanism might have some kind of unique properties in terms of their action on any kind of psychiatric disorder that may involve serotonin transporter function,” he said.

But ibogaine has too many molecular targets to make it a precision therapy. To gain more control over the drug’s actions, Rudnick wants to develop ibogaine-like compounds that target the serotonin transporter. To that end, Rudnick is working



with Brian Shoichet, Ph.D., of the University of California, San Francisco, who uses computer models to simulate the way proteins interact with potential drugs, to identify ibogaine-related drugs that bind to the serotonin transporter in its inward-open state.

Such a drug could have applications for opiate withdrawal, Rudnick said, or it might do something else completely novel: “There may be other potential problems that could be treated with drugs that act on these proteins, and we won’t know that until we actually have the drugs.”

—By Ashley P. Taylor

Gary Rudnick has found that a hallucinogen used in Central African coming-of-age rites may be useful in weaning people from opiate addiction.