

From: "Ed Boyden, [REDACTED]" <[REDACTED]>
To: "jeffrey E." <jeevacation@gmail.com>
Cc: Joi Ito <[REDACTED]>
Subject: Re: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2884105/#!po=38.3333>
Date: Thu, 20 Jul 2017 10:35:13 +0000

Yes, very cool!

My group is actually starting to plan a new project: can we derive new biotechnologies, from plant immune systems? Every time scientists have characterized an immune system, to date, they have developed a radical new biotechnology: from mammals came antibody therapy, and from bacteria came CRISPR. But not much is known about the plant immune system.

To my knowledge, no systematic study of plant immune systems has been launched previously. We are proposing a mathematical way to characterize plant immune systems: look for sequences in the plant genome that vary, from cell to cell, far more than they should. Such "hypervariable" sequences are a fairly universal clue that adaptive immunity is happening -- after all, the hypervariable sequences of the human genome yielded antibodies, and the hypervariable sequences of bacteria yielded CRISPR. Hypervariability means adaption, memory, and precision response.

Once we characterize the hypervariable parts of the plant genome, we will hopefully be able to launch an experimental characterization of these sequences: can we infer the method through which immunity is encoded? Can we then molecularly engineer this into a new kind of tool? At the very least, we should understand how plants resist their environment, but in the best case, we may open up new frontiers in biotechnology.

Happy to chat further!

Best,
Ed

On Wed, Jul 19, 2017 at 6:10 PM, jeffrey E. <jeevacation@gmail.com> wrote:

--

please note

The information contained in this communication is confidential, may be attorney-client privileged, may constitute inside information, and is intended only for the use of the addressee. It is the property of JEE

Unauthorized use, disclosure or copying of this communication or any part thereof is strictly prohibited and may be unlawful. If you have received this communication in error, please notify us immediately by return e-mail or by e-mail to jeevacation@gmail.com, and destroy this communication and all copies thereof, including all attachments. copyright -all rights reserved

--

Ed Boyden, Ph. D.
Leader, Synthetic Neurobiology Group

Associate Professor, MIT Media Lab and McGovern Institute,
Departments of Biological Engineering and Brain and Cognitive Sciences
Co-Director, MIT Center for Neurobiological Engineering
Massachusetts Institute of Technology
Building E15: E15-421, 20 Ames St., Cambridge, MA 02139 (mailing address)
Building 46: 46-2171C, 43 Vassar Street, Cambridge, MA 02139
email - [REDACTED]
phone - [REDACTED]
cell - [REDACTED]
fax - [REDACTED]
Google Hangout - [REDACTED]
skype - eboyden3
web - <http://syntheticneurobiology.org>
twitter - [REDACTED]