

Robotics and Artificial Intelligence: *Can They Make Today's Researchers Obsolete?*

Mark Jones

Executive External Strategy and Communications Fellow

The Dow Chemical Company



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source: <http://archive.darpa.mil>



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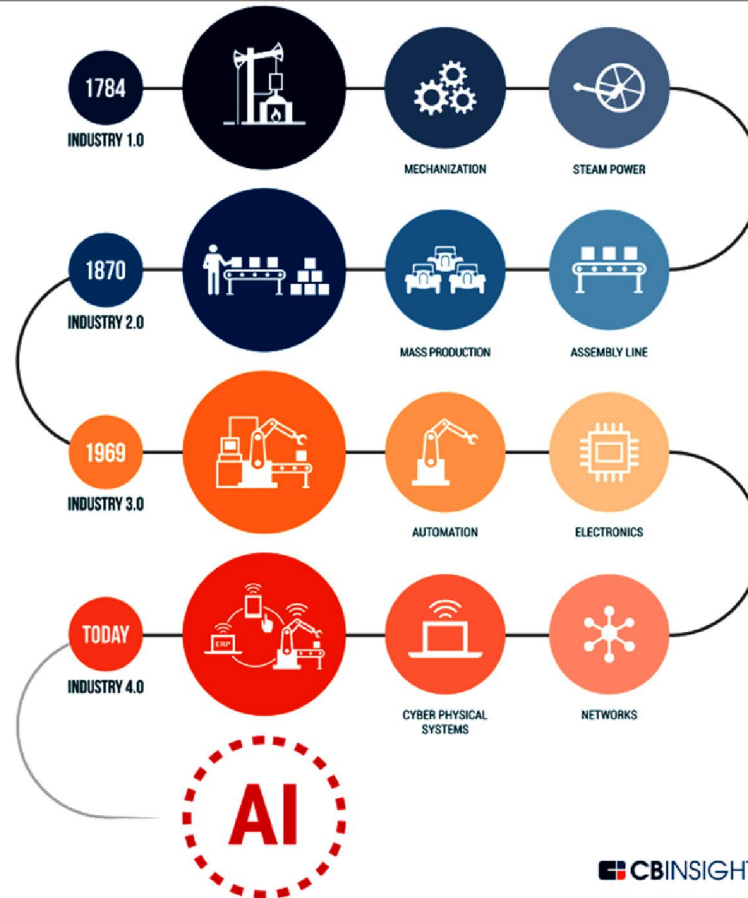
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10 Million Jobs At High Risk



*More Than Were
Eliminated During
Great Recession*

CBINSIGHTS



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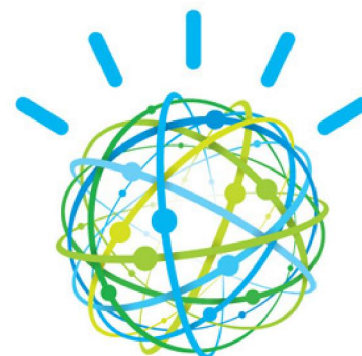
"Tech Support" by R. Kikuo Johnson



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JEOPARDY!

IBM WATSON



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THE ROBO-CHEMIST

The race is on to build a machine that can synthesize any organic compound. It could transform chemistry.

BY MARK PELOW

source: Peplow M. The robo-chemist. Nature. 2014 Aug 7;512(7512):20
illustration by Ryan Snook in Nature.



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```

TITLE DTAD1 page 60, 132
-----
This routine is called form FORTRAN using:
CALL DTAD1(I)
PASSED: NONE
RETURNED: I = Type INTEGER*2 = 10 bit A/D value
This routine reads a voltage in through A/D 1.
The digitized voltage is transferred through
the returned variable I. Prior to being
called, the DT2808 must be stopped and
cleared by DTINIT.
By Mark Jones on 16 July 1985
-----
IBM Macro Assembler
-----
CSEG SEGMENT PARA @CODES
DTAD1 PROC FAR ; MS FORTRAN makes far calls
ASSUME CS:CSEG
PUBLIC DTAD1
PUSH BP ; Save BP on stack
MOV BP, SP ; Put stack pointer in BP
PUSH DS ; Save DS on stack
-----
;
; check status, then write command to command register
;
CALL CWAIT
MOV DX, 02EDH ; address of command register
MOV AL, 000CH ; A/D immediate command
OUT DX, AL ; send command
-----
;
; check status, then write adgain to data
; in register. adgain=0
;
CALL SWAIT
MOV DX, 02ECH ; address of data register
MOV AX, 0000H ; adgain=0
OUT DX, AL ; send command

```



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HP 1000 Computer c.1983



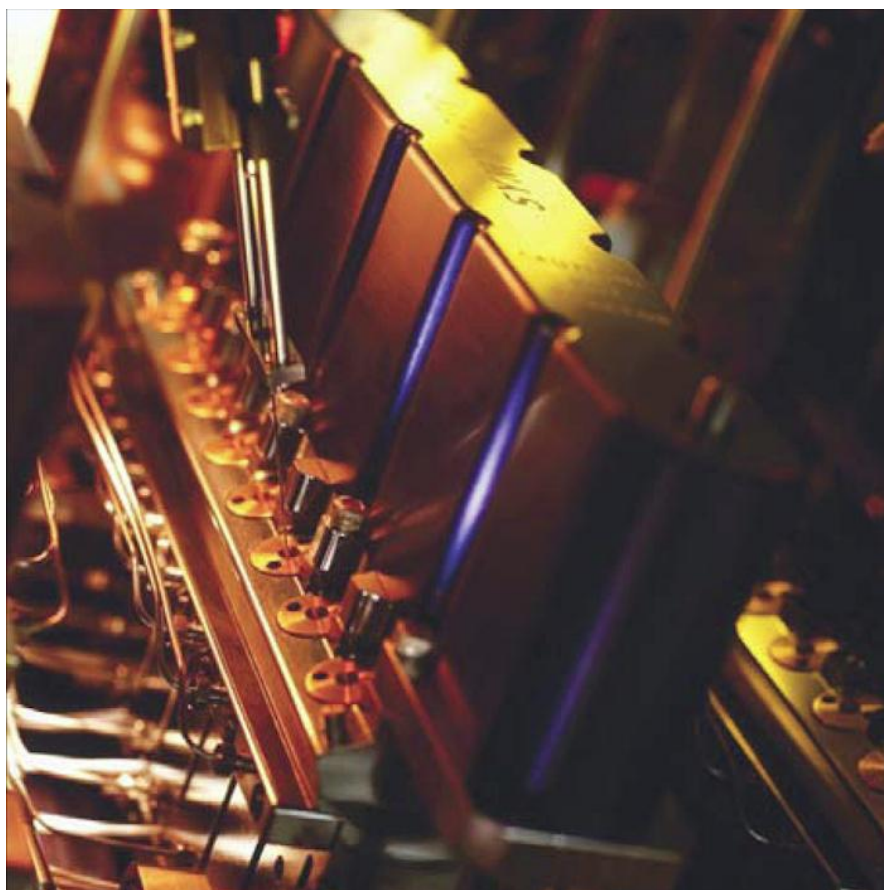
HP 5992 GC/MS c.1983





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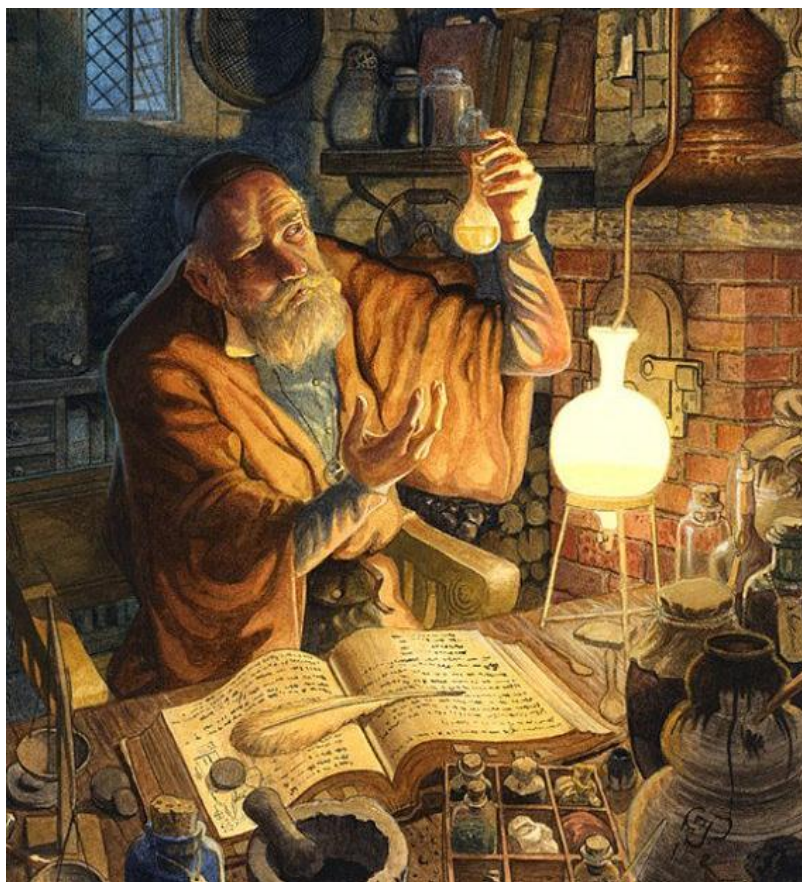


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Chemistry

observational



inventive

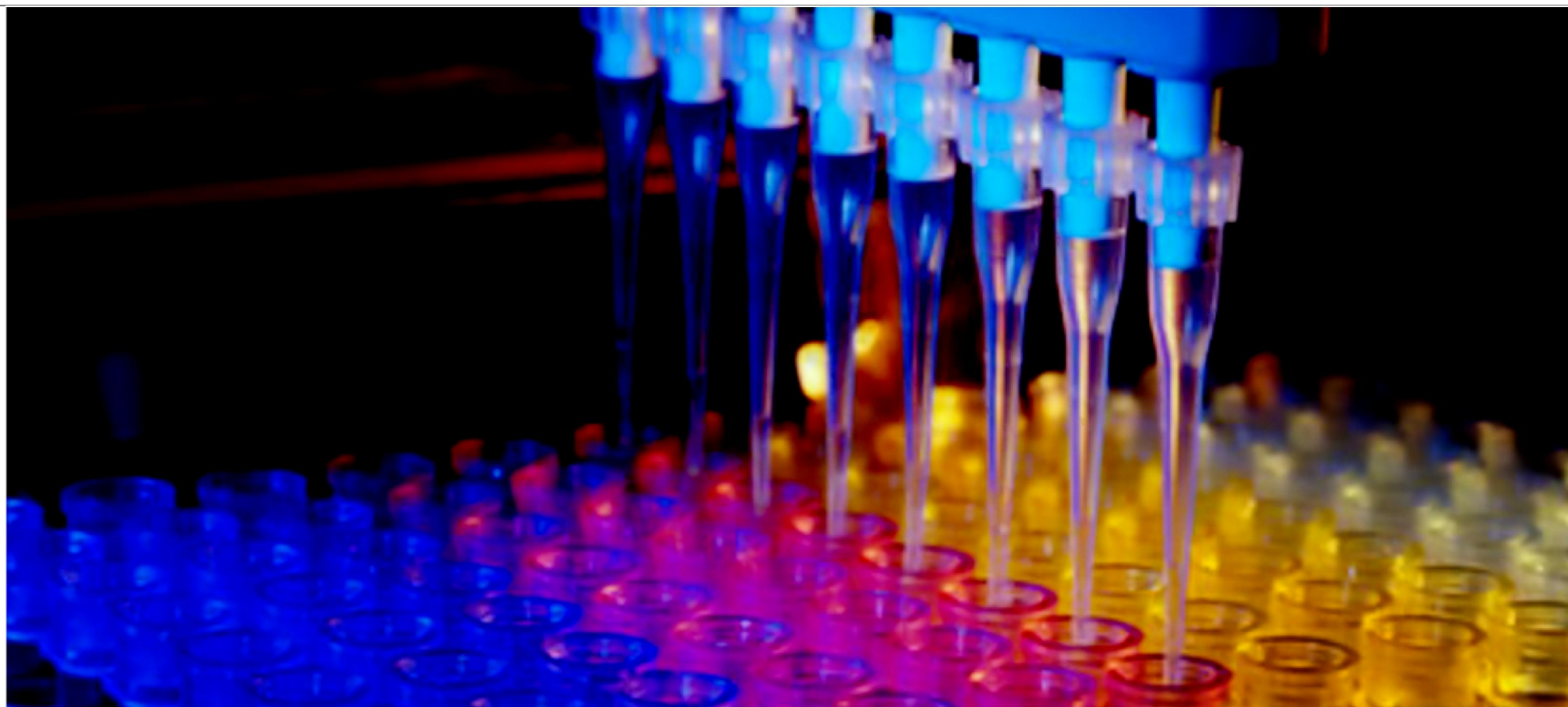


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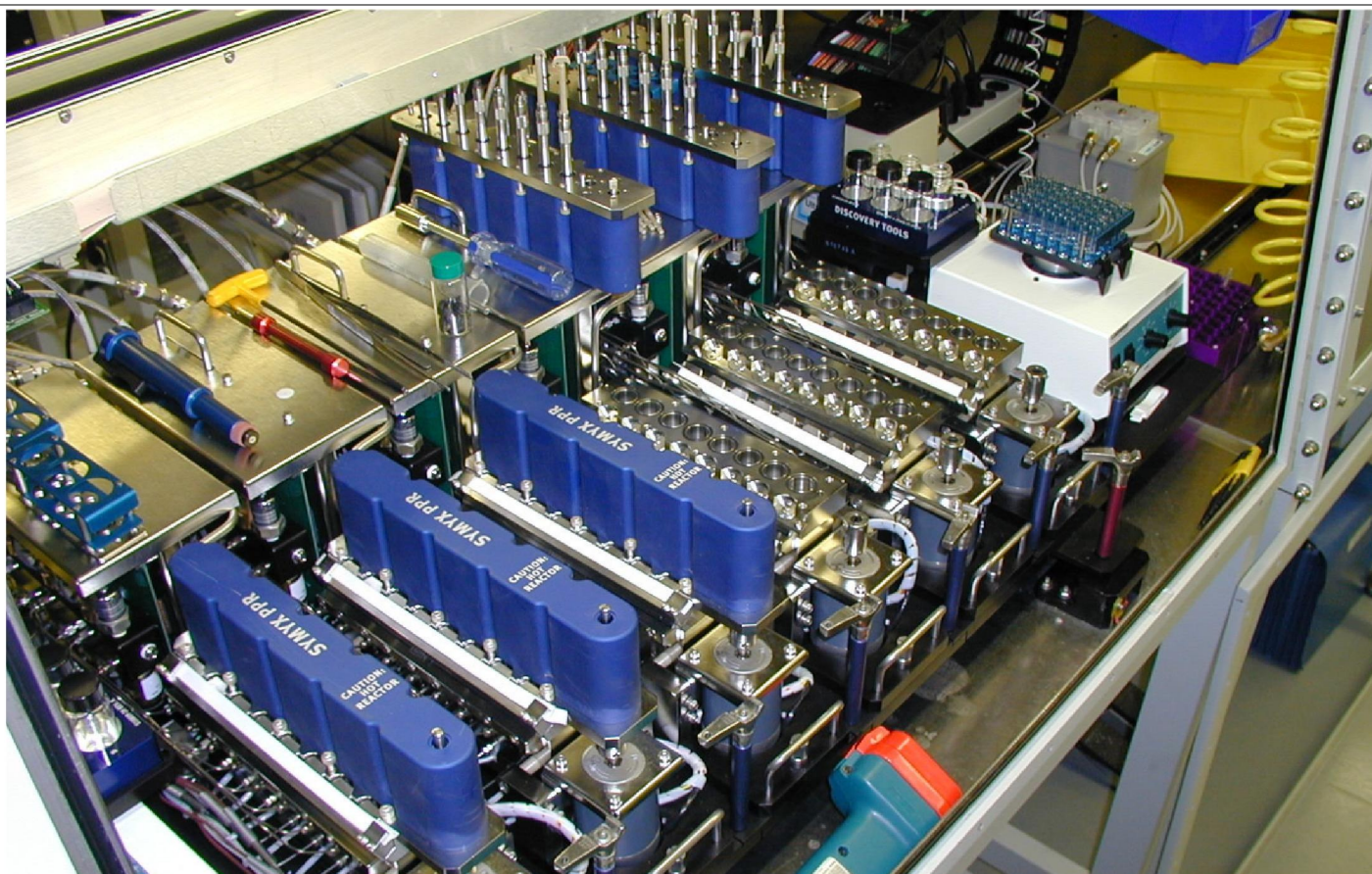
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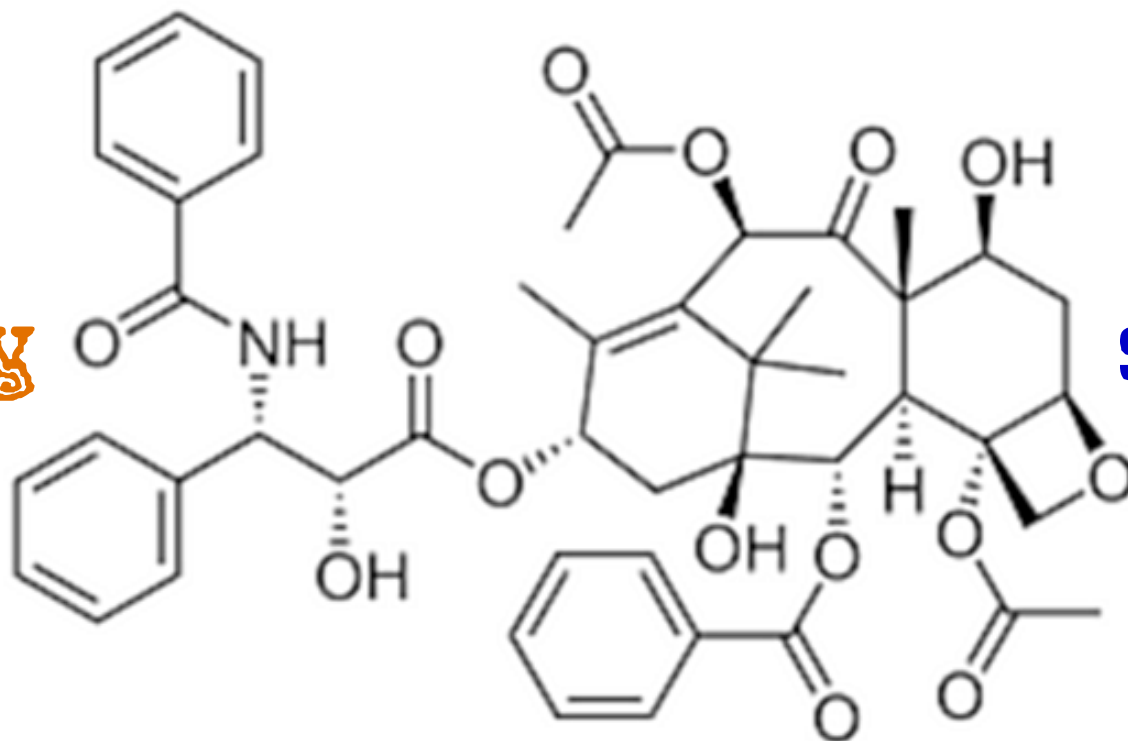


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inventive

discovery



synthesis



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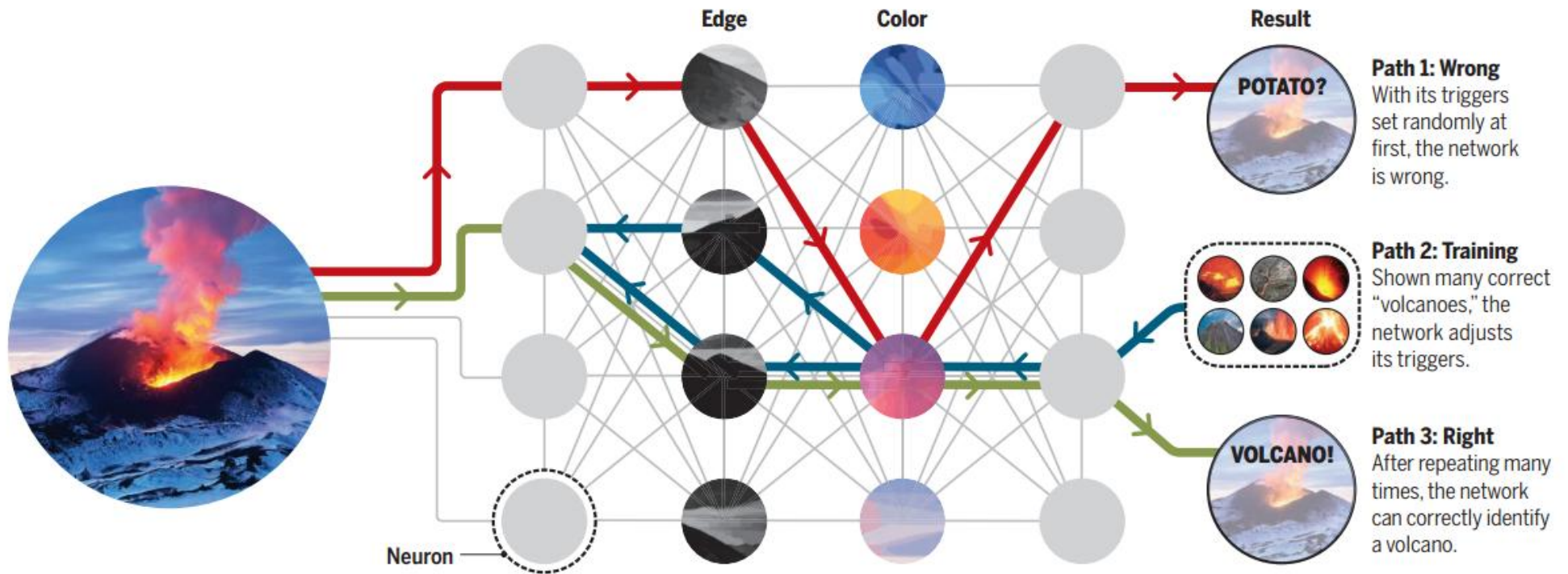
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Machine Learning



Source: G.GRULLÓN/Science 07 Jul 2017, pg 22-27.





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Article

Applications of artificial intelligence to chemistry. Use of pattern recognition and cluster analysis to determine the pharmacological activity of some organic compounds

Kenneth C. Chu

Anal. Chem., 1974, 46 (9), pp 1181-1187

DOI: 10.1021/ac60345a030

Publication Date: August 1974

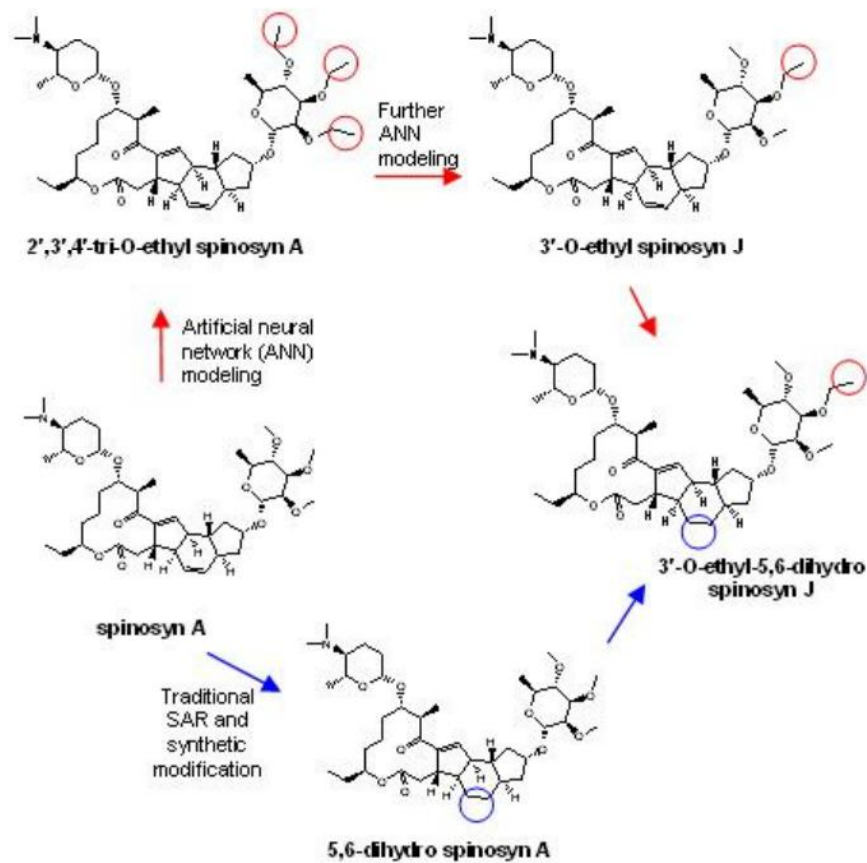


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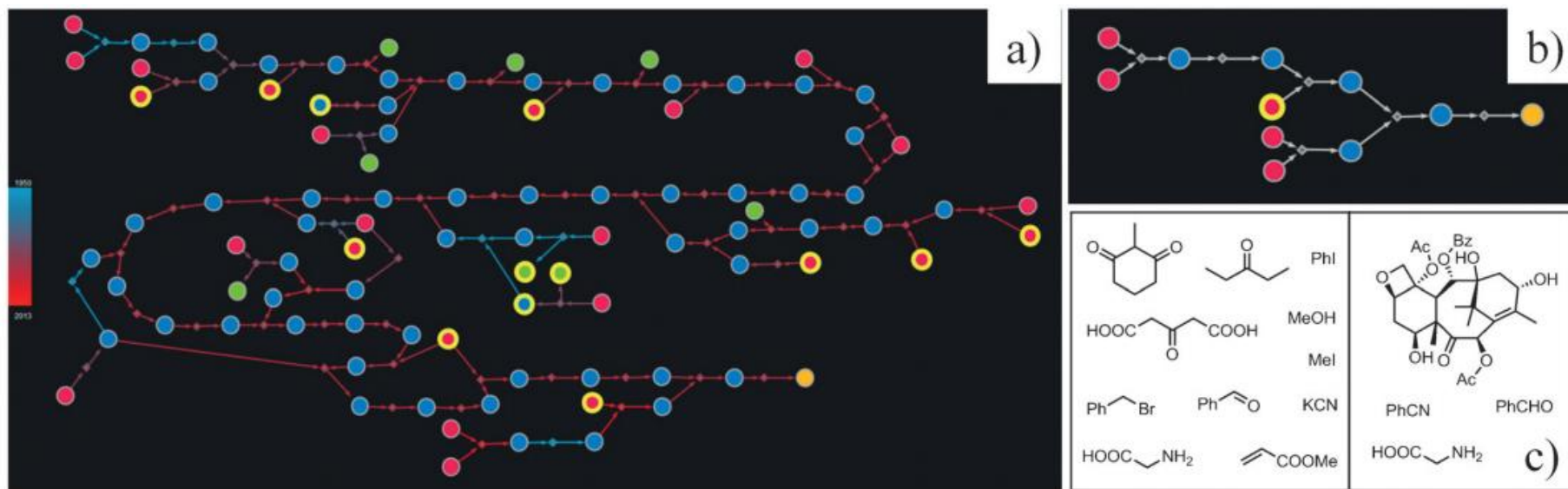
Dripps J, Olson B, Sparks T, Crouse G. Spinetoram: how artificial intelligence combined natural fermentation with synthetic chemistry to produce a new spinosyn insecticide. Plant Health Progress August PHP-2008-0822-01-PS. 2008 Aug.





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Szymkuć, S., Gajewska, E.P., Klucznik, T., Molga, K., Dittwald, P., Startek, M., Bajczyk, M. and Grzybowski, B.A., 2016. Computer-Assisted Synthetic Planning: The End of the Beginning. *Angewandte Chemie International Edition*, 55(20), pp.5904-5937.





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““

Prediction is very difficult,
especially if it's about the future.

Niels Bohr

It's tough to make predictions,
especially about the future.

Yogi Berra

””



TECH | KEYWORDS

Without Humans, Artificial Intelligence Is Still Pretty Stupid

There are likely hundreds of thousands of people, world-wide, whose work is sold as AI, says one expert



Without Humans, Artificial Intelligence Is Still Pretty Stupid

There are likely hundreds of thousands of people, world-wide, whose work is sold as AI, says one expert



Without a human reviewing images, it would be too easy to exploit Facebook's anti-revenge-porn service. PHOTO: DAI SUGANO/SAJI JOSE
MERCURY NEWS/ZUMA PRESS



By *Christopher Mims*
Nov. 12, 2017 7:00 a.m. ET

92 COMMENTS

If you want to understand the limitations of the algorithms that control what we see and hear—and base many of our decisions upon—take a look at [Facebook Inc.'s](#) [FB -0.39%](#) [experimental remedy for revenge porn](#).





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