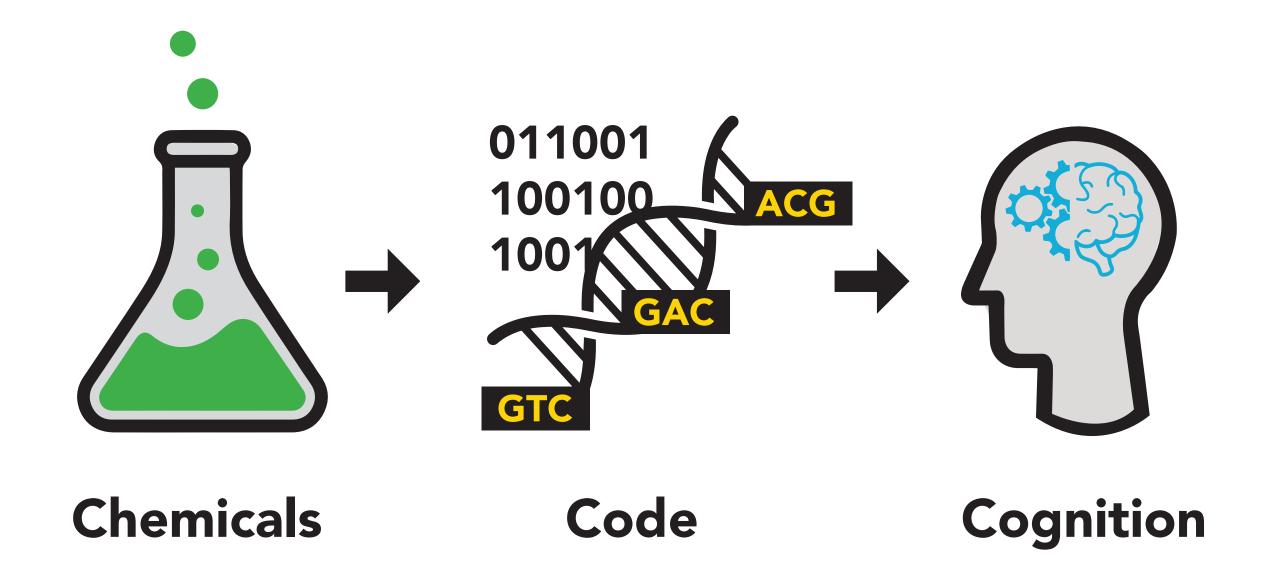
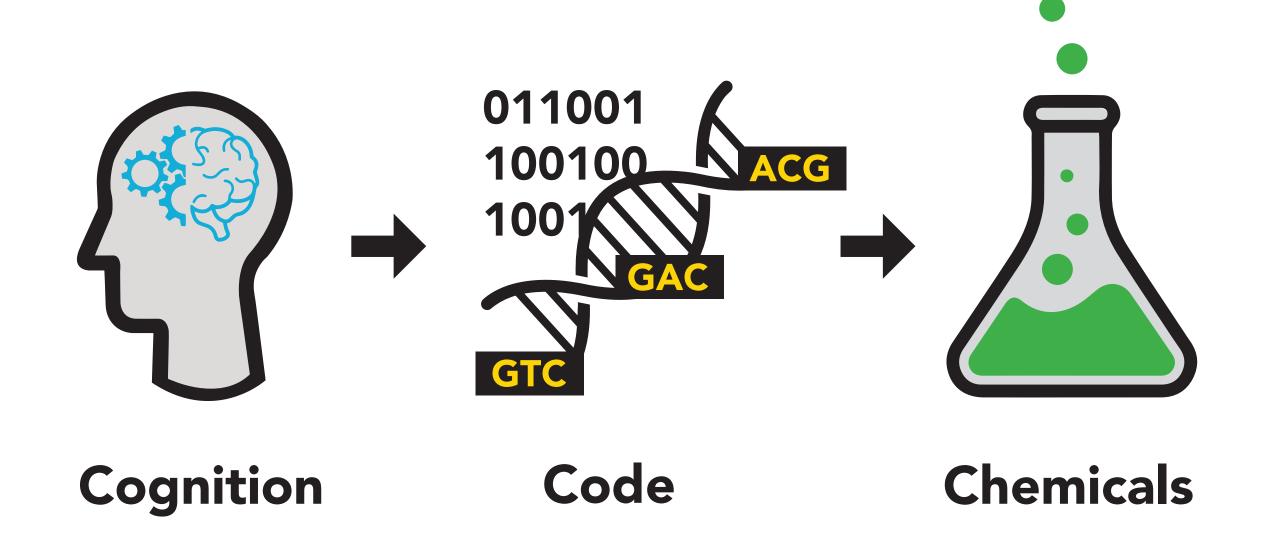
Agency of the Cell:

Convergence between Origin of Life, Evolution, Cognition and Cancer Perry Marshall, Founder, Evolution 2.0 Prize

Prevailing View:



Evidence Says:



Issues in Cancer:

Slash, Poison & Burn is not working (Raza 2019) Cancer is evolution running out of control (Heng 2019; Liu 2021) Genome Chaos: Cancer cells massively re-arrange genomes (Heng 2019) Tremendous power of cancer cells to out-evolve radiation and chemotherapy (Heng, 2019) All types of cells are capable of autonomous behavior in certain situations (Levin, 2020a)

Prevailing View gets Cause and Effect Backwards

All Living Cells are Cognitive (Shapiro 2020) Evolution is goal-seeking (Shapiro 2022; Noble & Noble 2017) Random mutations are noise and noise destroys (Shannon 1948, Marshall 2021) Natural selection is an outcome, not an explanation (Wagner 2014)

Cognition

Definition: "Total set of mechanisms and processes that underlie information acquisition, storage, processing, and use, at any level of organization" (Baluška and Levin, 2016) Cognition manifests agency, which is exclusive to biology (Cronin and Walker, 2016) Self/Non-Self Identification in bacteria and cancer cells (Ershova et al., 2015; Vasu and Nagaraja, 2013) High Speed Evolution: New species in week or months (Shapiro 2022)

Scan for more Info



\$10 Million Tech Prize





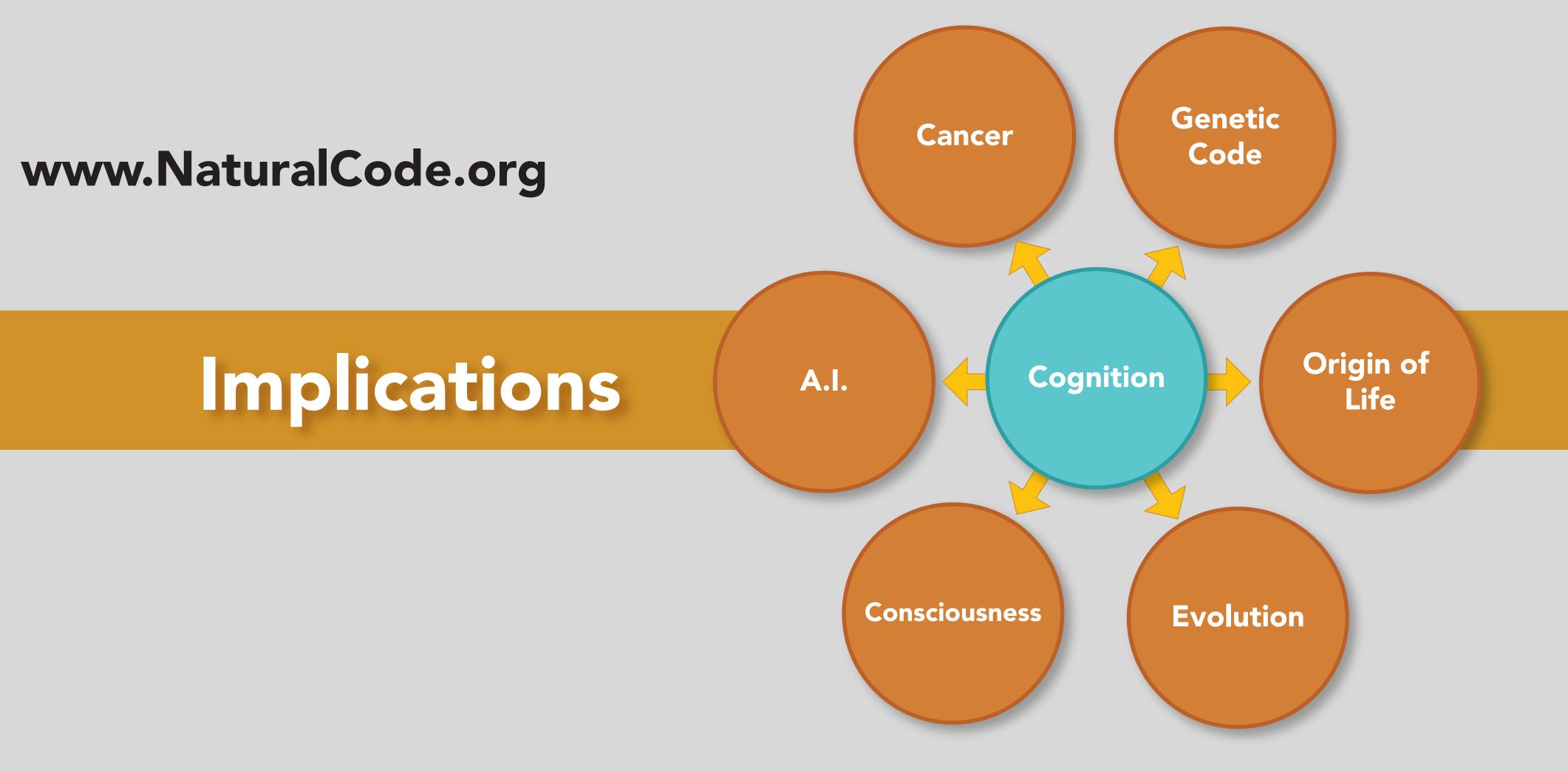








All Living Cells are Cognitive (Shapiro 2020) Evolution is goal-seeking (Shapiro 2022; Noble & Noble 2017) All Genetic Algorithms require goals (Floridi and Taddeo, 2018; Nield, 2019) All codes whose origin we know come from biology (Yockey 2005, Marshall 2015, 2021)



Choice and Agency: Not derivable from laws of physics (Marshall 2021; Kauffman and Roli 2021) Neither physical laws nor random interactions make choices (Walker et al., 2017)

Dilemma:

Chemicals (drugs) cannot in principle solve cancer Rules / algorithms cannot in principle solve cancer Cancer is a struggle of information and intent (Levin, 2020b) Therefore we must treat cancer as an autonomous purposeful agent with unique identity and capacity to choose.

Productive Questions

What does a cell know about itself? (McClintock 1984) Michael Levin: Triggers cancer cells to revert back to normal cells at will (Levin 2021) Origin & Nature of Information: Biggest question in science that can be precisely defined - intimately related to curing cancer! What if we can persuade cancer cells to want something different?

