SARA IMARI **WALKER, PhD**

Deputy Director, Beyond Center for Fundamental Concepts in Science, Arizona State University
Associate Director, ASU-SFI Center for Biosocial Complex Systems
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RESEARCH AREAS

ORIGINS OF LIFE, THEORETICAL PHYSICS, ASTROBIOLOGY, COMPLEXITY SCIENCE, ARTIFICIAL LIFE

EDUCATION

JUNE 2010
PHD PHYSICS AND ASTRONOMY, DARTMOUTH COLLEGE

JUNE 2005
B.S. PHYSICS, FLORIDA INSTITUTE OF TECHNOLOGY

JUNE 2003
A.A. MATH/SCI/PRE-ENGINEERING, CAPE COD COMMUNITY COLLEGE

PROFESSIONAL EXPERIENCE

2021 - PRESENT
SENIOR GLOBAL FUTURES SCIENTIST, JULIE ANN WRIGLEY GLOBAL FUTURES LABORATORY, ASU

2020- 2023
EXTERNAL PROFESSOR, SANTA FE INSTITUTE

2020 - PRESENT
ASSOCIATE PROFESSOR, SCHOOL OF COMPLEX ADAPTIVE SYSTEMS, ASU (0.25% APPOINTMENT)

2019 - PRESENT
ASSOCIATE PROFESSOR, SCHOOL OF EARTH AND SPACE EXPLORATION, ASU (0.75% APPOINTMENT)

2018 - PRESENT
ASSOCIATE DIRECTOR, ASU-SANTA FE INSTITUTE CENTER FOR BIOSOCIAL COMPLEXITY, ASU

2016 - PRESENT
DEPUTY DIRECTOR, BEYOND CENTER FOR FUNDAMENTAL CONCEPTS IN SCIENCE, ASU

2015 - PRESENT
HONORS FACULTY, BARRETT HONORS COLLEGE, ASU

2014 - PRESENT
GRADUATE FACULTY, DEPARTMENT OF PHYSICS, ASU

2014 - PRESENT
GRADUATE FACULTY, COMPLEX SYSTEMS, ASU

2014 - PRESENT
FACULTY, CENTER FOR SOCIAL DYNAMICS AND COMPLEXITY, ASU

2013 – 2019
ASSISTANT PROFESSOR, SCHOOL OF EARTH AND SPACE EXPLORATION, ASU

2013 - 2019
BOARD OF DIRECTORS, BLUE MARBLE SPACE (NON-PROFIT)

2015 - 2018
FELLOW, ASU-SANTA FE INSTITUTE CENTER FOR BIOSOCIAL COMPLEXITY, ASU

2011 - 2013
NASA POSTDOCTORAL PROGRAM FELLOWSHIP, NASA ASTROBIOLOGY INSTITUTE

2010 - 2011
POSTDOCTORAL FELLOW, CENTER FOR CHEMICAL EVOLUTION, GEORGIA INSTITUTE OF TECHNOLOGY

HONORS AND AWARDS

- 2021 Stanley Miller Early Career Award, International Society for the Study of the Origin of Life, international award given to the most promising early career researchers in origins of life research **($5,000**)
- 2021 National Institutes of Health NCATS ASPIRE Design Challenge Awardee Stage 2, Milestone 1 **($150,000**)
- 2020 National Institutes of Health NCATS ASPIRE Design Challenge Awardee Stage 1 (**$120,000**)
- 2020-2022, SCIALOG Fellow, Signatures of Life in the Universe, Research Cooperation for Science Development
- 2019 National Institutes of Health NCATS ASPIRE Design Challenge Awardee (**$250,000**)
- 2018, Nominated Outstanding Faculty Mentor Award, Graduate College, ASU
- 2018, Nominated GPSA Centennial Professorship Award, ASU
- 2016,2017,2018 Nominated, Zebulon Pearce Teaching Award, College of Liberal Arts & Science, ASU
- 2017, Finalist, Outstanding Faculty Mentor Award, Graduate College, ASU
- 2017, 4th Prize, for essay "Bio from Bit", Foundational Questions in Science Essay Contest **($1000**)
- 2016, "Out-of-the-box-thinking" Prize, for essay "The Descent of Math", Foundational Questions in Science Essay Contest (**$500**)
- 2015, Fellow, ASU-Santa Fe Institute Center for Biosocial Complex Systems

- 2015, Distinguished Lecturer Interdisciplinary Science, Gettysburg College (**$1000**)
- 2013, Omidyar Fellowship, Santa Fe Institute (declined)
- 2012, 4th Prize, for essay "Is Life Fundamental?", Foundational Questions in Science Essay Contest (**$1000**)
- 2011, NASA Postdoctoral Program Fellowship, NASA
- 2010, Carnegie Fellowship, Geophysical Laboratory, Carnegie Institution (declined)
- 2009, Gordon F. Hull Fellowship, Dartmouth College (full year stipend awarded to outstanding finishing PhD student)
- 2009, Filene Teaching Award, Dartmouth College (**$1000**)
- 2008, Selamawit Tsehaye Teaching Award, Department of Physics, Dartmouth College
- 2008, Graduate Community Service Award, Dartmouth College (**$1000**)
- 2007 -2008, Space Grant/NASA Graduate Fellowship, New Hampshire Space Grant
- 2005, Dartmouth Fellowship, Dartmouth College (5 yr stipend)

FUNDED GRANTS (PI or ASU-PI)

- Goal-Directed Outcomes in Complex Chemical Systems, JTF, 11/1/2021 – 10/31/2024 **$1,360,283 (~$708,878 ASU) PI: S. Walker** (ASU), Co-I: L. Cronin (Glasgow) (100% ASU Rec)
- Planetary Systems Biochemistry, NASA, 5/1/2021 – 4/30/2023, **$1,500,000 ($1,500,000 ASU) PI: S. Walker** (ASU), Co-Is: H. Hartnett, M. Line, E. Trembath-Reichert (ASU) (40% ASU Rec)
- Geochemputer, NASA 5/1/2021 – 4/30/2023 **$179,932 ($179,932 to ASU)** PI: S. Walker (ASU), Co-Is: H. Hartnett (ASU), E. Shock (ASU), Collaborators: L. Cronin (U. Glasgow) (Planetary Major Equipment supplement to iCAR Planetary Systems Biochemistry project) (40% ASU Rec)
- Laboratory for Agnostic Biosignatures, NASA, PI: Sarah Johnson (Georgetown), Co-Is: H. Graham (NASA Goddard), E. Anslyn (U. Texas), A. Ellington (U. Texas), L. Cronin (U. Glasgow), P. Girguis (Harvard U.), C. House (Penn. State U.), C. Kempes (SFI), E. Libby (UMEA), P. Mahaffy (NASA Goddard), P. Conrad (Carnegie), J.E. Cook(NASA Goddard), B. Sherwood Lollar (U. Toronto), A. Steele (Carnegie) **$2,517,088 ($164,402 ASU)** – **S. Walker** added to project after initial proposal due to leading work in agnostic biosignature approaches (100% ASU Rec)
- Uncovering the OS of Trees, Human Frontiers Science Program, 12/1/2020 – 11/30/2023, **$1,350,000 ($242,140 ASU)** PI: George Bassel (U. Warwick), **Co-Is: S. Walker** (ASU), E. Bayer (CNRS), R. Bhalerho (SLU) (100 % ASU Rec)
- Exploring the Informational Transitions Bridging Simple Chemistry and Minimal Life, John Templeton Foundation, 11/1/2018 – 10/31/2021, $**2,917,320 ($1,025,315 ASU), PI: S.Walker** (ASU), Co-Is: P. Davies (ASU), L. Cronin (U. Glasgow), K. Adamala (UMN) (75% ASU Rec)

- Somatic Computation via Bioelectricity for Novel Lifelong Learning Machines, DARPA, 2/01/2018-1/31/2022, **$2,248,997 ($471,157 ASU)**, PI: M. Levin (Tufts), **Co-Is:** J. Bongard (UVM), **S. Walker** (ASU) (100 % ASU Rec)
- Cooperation and Interpretation in the Emergence of Life, John Templeton Foundation, 1/1/2018-12/31/2021, **$630,791 ($201,176 ASU)**, PI: C. Southgate (U. Exeter), **Co-Is:** A. Robinson (U. Exeter), **S. Walker** (ASU) (100 % ASU Rec)
- Emergent Computation in Collective Decision Making by the Ant *Temnothorax Rugatalus* , NSF, 5/1/2016-4/30/2019, **$595,520, PI: S. Walker**, Co-Is: S. Pratt, T. Pavlic, H.Kim (ASU) (40 % ASU Rec)
- Multilevel Evolution of Chemical Reaction Networks, NASA, 5/18/2015-5/17/2018, **$631,836, PI: S. Walker**, Co-Is: J. Raymond, H.Kim (ASU) (70 % ASU Rec)
- Physics of the Observer: Accommodating Active Observers in Fundamental Physics with Causal Mechanics, Foundational Questions in Science Institute, 1/1/2017 – 12/31/2018, **$73,151, PI: S. Walker** (ASU), Co-I: C. Marletto (Oxford) (100 % ASU Rec)
- The Evolution of "Read- Write" Information in Biology: Computational and Experimental Models of Non-Genomic Information Imprinted on Living Tissues, Templeton World Charity Foundation, 1/1/2016-8/31/2017, **$393,111 ($227,849 ASU)**, PI: M. Levin (Tufts), **Co-I: S.Walker** (ASU) (100 % ASU Rec)
- The Emergence of Life as a Transition in Causal and Informational Architecture, Templeton World Charity Foundation, 8/1/2013-7/31/2016, **$911,286**, PI: P.Davies (ASU), **Co-PI: S.Walker** (ASU) (50 % ASU Rec)
- Re-conceptualizing the Origin of Life: Experimental, Interdisciplinary, and Computational Windows on the Core Concepts, NASA, **$35,713.80, PI: S.Walker** (ASU), Co-I: G. Cody (Carnegie) (N/A % ASU Rec)
- The Power of Information Book Project, Foundational Questions in Science Institute, 1/1/2014-12/31/2014, **$3,500, PI: S. Walker** (ASU) (100 % ASU Rec)
- Cancer and the Origin of Multicellularity, NCI, 10/1/2012 – 8/31/2013, **$25,000** PI: L. Cisneros (ASU), **Co-I: S.Walker** (ASU)

FUNDED GRANTS (CO-I)

- NASA SMD Exploration Connection, NASA, 2015-2020, $10,183,479, PI: L. Elkins Tanton, Co-Is: A. Anbar, E. Asphaug, J. Bell, S. Boonstra, P. Christensen, W. Farr, S. Parazynski, S. Semken, M. Wadhwa, D. Williams, P. Young, **S. Walker** (ASU) (5% ASU Rec)
- Exoplanetary Ecosystems: Exploring Life's detectability on chemically diverse exoplanets, NASA, 2014-2019, $7,994,891, PI: S. Desch ASU, Co-Is: A. Anbar, E. Asphaug, H. Cadillo-Quiroz, J. Elser, H. Hartnett, A. McNamara, S. Neuer, J. Patience, A. Poret- Peterson, J. Raymond, S-H. Shim, E. Shock, C. Till, M. Wadhwa, P. Young, M. Zolotov, **S. Walker** (ASU), P. Dijkstra (NAU), D. Ebel (AMNH), M. Ghiorso (UW), N. Hinkel (SFSU), S. Kane (SFSU), C. Lisse (JHU), E. Mamajek (UR), S. Raymond (Bordeaux), M. Turnbull (GSI) (4% ASU Rec)

PUBLICATIONS

PEER-REVIEWED PUBLICATIONS

† Walker lab Postdoctoral Fellow/Research Scientist. ‡ Walker lab graduate student. ‡† ASU undergrad, ⁎Authors contributed equally. • Invited Paper. •• Cover.ᵛCorresponding author. Articles featured in national and/or international press are underlined. (Citation data retrieved from Google Scholar Spring 2022)

1. D. Gagler‡, B. Karas‡, C. Kempes A. Goldman, H. Kim† and **S.I. Walkerᵛ** (2021) Scaling Laws in Enzyme Function Reveal a New Kind of Biochemical Universality. *Proceedings National Academy of Sciences, 119(9), e2106655119* ***(IF = 11.2)***
2. A. Frank, D. Grinspoon, **S.I. Walker** (2022) Intelligence as a Planetary Scale Process. Int. J. Astrobiology, 1-15 ***(IF = 1.673)***
3. G. Valentini†, T.P. Pavlic, **S.I. Walker,** SC Pratt, D. Brio, T. Saski (2021) Naïve Individuals Promote Collective Exploration in Homing Pigeons. *eLife 2021;10:e68653.* ***(IF = 8.14)***
4. H.B. Smith‡, H. Kim† and **S.I. Walkerᵛ** (2021) Scarcity of Scale-free topology is Universal across Biochemical Networks. *Scientific Reports* **11 (1),** 1-13. ***(IF = 4.38; Citations = 3)***
5. S. Marshall, C. Mathis, E. Carrick, G. Keenan, G.J.T. Cooper, H. Graham, M. Craven, P.S. Gromski, D.G. Moore†, **S.I. Walker** and L. Cronin (2021) Identifying molecules as biosignatures with assembly theory and mass spectrometry. *Nature Communications* 12, 3033. ***(IF = 14.92; Citations = 19) – this manuscript is in the 99th percentile of top-accessed articles of similar age in Nat. Comms.***
6. H. Kim†, G. Valentini†, J. Hanson‡ and **S.I. Walkerᵛ** (2021) Information Architecture Across Non-living and Living Collectives. *Theory in Biosciences* **1-17.** ***(IF = 1.92; Citations = 4)***
7. T. Pavlic, J. Hanson‡, G. Valentini†, **S.I. Walker** and S. Pratt (2021) Quorum Sensing without Deliberation: Biological Inspiration for Externalizing Computation to Physical Spaces in Multi-robot Systems. *Swarm Intelligence* 15, 171-203. ***(IF = 2.14, Citations = 1)***
8. H. Smith‡, A. Drew‡†, J. Malloy‡, **S.I. Walkerᵛ** (2021) Seeding Biochemistry on Other Worlds: Enceladus as a Case Study. *Astrobiology* 21(2). ***(IF = 4.09; Citations = 4)***
9. J. Hanson‡, **S.I. Walkerᵛ** (2021) Formalizing Falsification for Theories of Consciousness Across Computational Hierarchies. *Neuroscience of Consciousness* (2) niab014.). ***(IF = 3.06; Citations = 8)***
10. J. Bell, G. Bianconi, D. Butler, J. Crowcoft, P.C.W. Davies, C. Hicks, H. Kim, I. Kiss, F. Di Lauro, C. Maple, A. Paul, M. Prokopenko, P. Tee, **S.I. Walker** (2020) Beyond COVID-19: Network science and sustainable exit strategies. *J. Phys. Complexity* **2(2),** 021001. ***(IF = 4.62; Citations = 10)***

11. G. Valentini†, N. Mizumoto, S.C. Pratt, T.P. Pavlic**, S.I. Walker⬧** (2020) Revealing the structure of information flows discriminates similar animal social behaviors. *eLife,* 2020;9:e55395. ***(IF = 8.14; Citations = 10)***
12. D.M. Glaser, H.E. Hartnett, S.J. Desch, C.T. Unterborn, A. Anbar, S. Buessecker, T. Fisher‡, S. Glaser, S.R. Kane, C.M. Lisse, C. Millsaps‡, S. Neuer, J.G. O'Rourke, N. Santos, **S.I. Walker**, and M. Zolotov (2020) Detectability of Life Using Oxygen on Pelagic Planets and Water Worlds. *The Astrophysical Journal* **893** 163. ***(IF= 8.198; Citations = 17)***
13. G. Valentini†, N. Masuda, Z. Shaffer, J.R. Hanson‡, T. Sasaki, **S.I. Walker**, T.P. Pavlic, S.C. Pratt. (2020) Division of labour promotes the spread of information in colony emigrations by the ant Temnothorax rugatulus. *Proceedings of the Royal Society B.* **287(1924)**:20192950. ***(IF= 5.349; Citations = 13)***
14. E. Borriello†, **S.I. Walker**, M.D. Laubichler. (2020) Cell phenotypes as macrostates of the GRN dynamics. *Journal of Experimental Zoology Part B: Molecular and Developmental Evolution.* **334(4):** 213-224. ***(IF= 1.79; Citations = 7)***
15. A. Truitt, P. Young, **S.I.Walker,** A. Spacek (2020) A Flexible Bayesian Framework for Assessing Habitability with Joint Observational and Model Constraints. The Astronomical Journal **159(2),** 55. ***(IF= 6.26; Citations = 6)***
16. J. Hanson‡ and **S.I. Walker⬧** (2019) Integrated Information and Feed-forward Philosophical Zombies. *Entropy* 21(11), 1073. ***(IF= 2.42; Citations = 14)***
17. S. Zhou‡, M. Phielipp, J. Sefair, **S.I.Walker** and H. Ben Amor (2019) Clone Swarms: Learning to Predict and Control Multi-Robot Systems by Imitation, Proceedings of IEEE/RSJ *International Conference on Intelligent Robots and Systems (IROS) (**Citations = 9)***
18. D. Moore† and **S.I. Walker⬧** (2019) Inferring a Graph's Topology from Games Played on It. *Proceedings of ALife* 2019, pp. 271-277. **(IF = 0.667)**
19. **S.I. Walker⬧** (2019) The New Physics Needed to Probe the Origins of Life. Nature 569, 36-38. **(IF = 49.96, *Citations = 7*)**
20. A.J. Surman, M. Rodriguez Garcia, Y.M. Abul-Haija, G.J.T. Cooper, M. Mullin, C. Mathis‡, **S.I. Walker** and L. Cronin (2019) Environmental control over random oligomerisation of amino acid monomers programs the emergence of structures with function. *Proc. Nat. Acad. Sci. USA* 116 no. 12: 5387-5392. ***(IF = 11.2; Citations = 35)***
21. H. Kim†, H.B. Smith‡, C. Mathis‡, J. Raymond and **S.I. Walker⬧** (2019) Universal scaling across biochemical networks on Earth. Science Advances 5: eaau0149 ***(IF = 14.14; Citations = 30)***
22. B. Daniels, H. Kim†, D. Moore†, S. Zhou‡, H.B. Smith‡, B. Karas‡, S.A. Kauffman, and **S.I. Walker⬧** (2018) Criticality Distinguishes the Ensemble of Biological Regulatory Networks Phys. Rev. Lett. 121 138102. ***(IF = 9.16; Citations = 62)***
23. **S. I. Walker⬧**, W. Bains, L. Cronin, S. DasSarma, S. Danielache, S. Domagal-Goldman, B. Kacar, N. Y. Kiang, A. Lenardic, C. T. Reinhard, W. Moore, E. W. Schwieterman, E. L. Shkolnik, H. B. Smith‡ (2018) Exoplanet Biosignatures: Future Directions. Astrobiology 18(6) 779-824.). ***(IF = 4.09; Citations = 91)***

24. E. W. Schwieterman, N.Y. Kiang, M.N. Parenteau, C. E. Harman, S. DasSarma, T. M. Fisher‡, G.N. Arney, H. E. Hartnett, C. T. Reinhard, S. L. Olson, V. S. Meadows, C. S. Cockell, **S. I. Walker**, J.L. Grenfell, S. Hegde, S. Rugheimer, R. Hu, T. W. Lyons (2018) Exoplanet Biosignatures: A Review of Remotely Detectable Signs of Life. Astrobiology 18(6) 663.). ***(IF = 4.09; Citations = 311)***
25. •• N.Y. Kiang, S. Domagal-Goldman, M.N. Parenteau, D.C. Catling, Y. Fujii, V.S. Meadows, E.W. Schwieterman and **S.I. Walker** (2018) Exoplanet Biosignatures: At the Dawn of a New Era of Planetary Observations. Astrobiology 18(6) 619. ***(IF = 4.09; Citations = 44)***
26. G.Valentini †, D. Moore †, J. Hanson‡, T. Pavlic, S. Pratt and **S.I. Walker⬧** (2018) Transfer of Information in Collective Decisions by Artificial Agents, Proceedings of the 2018 Conference on Artificial Life, pp. 641 – 648. (***Citations = 14)***
27. D. Moore†, G. Valentini†, **S.I. Walker⬧** and M. Levin. (2018) Inform: Efficient Information- Theoretic Analysis of Collective Behaviors. Frontiers in Robotics and AI: Computational Intelligence 5 60. ***(IF = 4.33; Citations = 17)***
28. **S.I. Walker⬧** (2017) Origins of Life: A Problem for Physics, A Key Issues Review. Rep. Prog. Phys. 80(9):092601. ***(IF = 17.26; Citations = 52)***
29. •• **S.I. Walker⬧**, N. Packard and G. Cody (2017) Re-Conceptualizing the Origins of Life. Phil. Trans. Roy. Soc. A 375 (2109) 20160337 ***(IF = 4.226; Citations = 22)***
30. W.Marshall, H.Kim†, G. Tononi, **S.I. Walker** and L. Albantakis (2017) How Causal Analysis Can Reveal Autonomy in Models of Biological Systems. Phil. Trans. Roy. Soc. A 375 (2109), 20160358. ***(IF = 4.226; Citations = 53)***
31. D. Moore†, G. Valentini†, **S.I. Walker⬧** and M. Levin. (2017) Inform: A Toolkit for Information- Theoretic Analysis of Complex Systems. 2017 IEEE Symposium Series on Computational Intelligence (SSCI), 1-8.
32. C. Mathis‡, S. Ramprasad, **S.I. Walker**, and N. Lehman (2017) Prebiotic RNA Network Formation: A Taxonomy of Molecular Cooperation. Life 7 (4), 38. ***(IF = 2.99; Citations = 18)***
33. E. Borriello† and **S.I. Walker⬧** (2017) Information-theoretic Classification of Elementary Cellular Automata. Complexity 1280351. ***(IF = 4.621; Citations = 8)***
34. D. Moore†, **S.I. Walker** and M. Levin. (2017) Cancer as a Disorder of Patterning Information: computational and biophysical perspectives on the cancer problem. Convergent Science Physical Oncology https://doi.org/10.1088/2057-1739/aa8548 ***(Citations = 40)***
35. •• A. Adams‡, A. Berner‡†, P.C.W. Davies and **S.I. Walker⬧** (2017) Physical Universality, State- Dependent Dynamics and Open-Ended Evolution. Entropy, 19(9), 461. ***(IF = 2.419; Citations = 11)***
36. Adams‡, H. Zenil, P.C.W. Davies and **S.I. Walker⬧** (2017) Formal Definitions of Unbounded Evolution and Innovation Reveal Universal Mechanisms for Open-Ended Evolution in Dynamical Systems. Sci. Rep. 7: 997. ***(IF = 4.38; Citations = 48)***
37. Mathis‡, T. Bhattacharya and **S.I. Walker⬧** (2017) The Emergence of Life as a First Order Phase Transition. Astrobiology 17 (3): 266-276. ***(IF = 4.09; Citations = 27)***

38. Adams, A‡ and **S.I. Walker**⬩ (2017) Real-World Open-Ended Evolution: A League of Legends Adventure. Int. J. Design & Nature and Ecodynamics 12(4): 458 – 469. (***Citations = 4)***
39. Davies, P.C.W. and **S.I. Walker**⬩ (2016) The Hidden Simplicity of Biology. Rep. Prog. Phys. 79 (10) 102601. ***(IF = 17.26; Citations = 43)***
40. L. Cronin and **S.I. Walker**⬩ (2016) Beyond Prebiotic Chemistry. Science 352 1174-1175. ***(IF = 47.728, Citations = 70)***
41. S.D. Domagal-Goldman, K.E. Wright, K. Adamala, A. de la Rubia Leigh, J. Bond, L.R. Dartnell, A.D. Goldman, K. Lynch, M.-E. Naud, I.G. Paulino-Lima, K. Singer, M. Walter-Antonio, X.C. Abrevaya, R. Anderson, G. Arney, D. Atri, A. Azu´a-Bustos, J.S. Bowman, W.J. Brazelton, G.A. Brennecka, R. Carns, A. Chopra, J. Colangelo-Lillis, C.J. Crockett, J. DeMarines, E.A. Frank, C. Frantz, E. de la Fuente, D. Galante, J. Glass, D. Gleeson, C.R. Glein, C. Goldblatt, R. Horak, L. Horodyskyj, B. Kacar, A. Kereszturi, E. Knowles, P. Mayeur, S. McGlynn, Y. Miguel, M. Mont- gomery, C. Neish, L. Noack, S. Rugheimer, E.E Stueken, P. Tamez-Hidalgo, **S.I. Walker**, and T. Wong (2016) Astrobiology Primer 2.0. Astrobiology 16 561-653. ***(IF = 4.09; Citations = 105)***
42. **S.I. Walker**⬩, H. Kim† and P.C.W. Davies (2016) The Informational Architecture of the Cell. Phil. Trans. Roy. Soc. A 374 20150057. ***(IF = 4.226; Citations = 78)***
43. H. Kim†, P.C.W. Davies and **S.I. Walker**⬩ (2015) New Scaling Relation for Information Transfer in Biological Networks. J. Roy. Soc. Interface 12 20150944. ***(IF = 4.118; Citations = 33)***
44. P. Nghe, W. Hordijk, S. Kauffman, **S.I. Walker**, F. Schmidt, H. Kemble, J.A.M. Yeates and N. Lehman (2015) Prebiotic Network Evolution. Roy. Soc. Chem. Mol. Biosys. 11 3206-3217. ***(IF = 3.743; Citations = 89)***
45. **S.I. Walker**⬩ (2014) Top-down Causation and the Rise of Information in the Emergence of Life. Information 5 424-439. ***(IF = 2.38; Citations = 45)***
46. T.Pavlic†, A.M. Adams ‡, P.C.W. Davies and **S.I. Walker**⬩ (2014) Self-Referencing Cellular Automata: A Model of the Evolution of Information Control in Biological Systems. Proc. Artificial Life XIV pp. 522- 529. (***Citations = 13)***
47. **S.I. Walker**⬩, P.C.W. Davies, P. Samantray‡ and Y. Aharanov. (2014) Quantum Non-barking Dogs. New J. Phys. 16 063026. ***(IF = 3.729; Citations = 5)***
48. **S.I. Walker**⬩, B. Callahan∗, G. Arya, J.D. Barry, T. Bhattacharya, S. Grigoryev, M. Pellegrini, K. Rippe, S.M. Rosenberg. (2013) Evolutionary Dynamics and Information Hierarchies in Biological Systems'. Ann. N.Y. Acad. Sci. DOI: 10.1111/nyas.12140 ***(IF = 4.728; Citations = 9)***
49. N. Vaiyda∗, **S.I. Walker**⬩ and N. Lehman. (2013) Recycling of Informational Units Leads to Selection of Replicators in a Prebiotic Soup. Chemistry & Biology 20: 241 - 252. ***(IF = 4.728; Citations = 33)***
50. **S.I. Walker**⬩ and P.C.W. Davies "The Algorithmic Origins of Life" (2013) J. Roy. Soc. Interface 6: 20120869. ***(IF = 4.118; Citations = 210)***
51. M. Gleiser and **S.I. Walker** (2012) Life's Chirality from Prebiotic Environments. Int. J. Astrobio. 11: 287-296. ***(IF = 1.673; Citations = 12)***

52. M. Wu, **S.I. Walker**, and P.G. Higgs. (2012) Autocatalytic Replication and Homochirality in Biopolymers: Is Homochirality a Requirement of Life or a Result of it? Astrobiology 12: 809 – 817. ***(IF = 4.09; Citations = 28)***
53. **S.I. Walker**♦, L. Cisneros and P.C.W. Davies. (2012) Evolutionary Transitions and Top-Down Causation. Proceedings of Artificial Life XIII. p 283-290. ***(IF = 0.67; Citations = 58)***
54. Schulze-Makuch, P.C.W. Davies and **S.I. Walker**. (2012) A Series of One-Way Missions to Explore and Colonize Mars. Proceedings of the 2012 Global Space Exploration Conference.
55. **S.I. Walker**, M.A. Grover and N. V. Hud. (2012) Universal Sequence Replication, Reversible Polymerization and Early Functional Biopolymers: A Model for the Initiation of Prebiotic Sequence Evolution. PLoS ONE 7: e34166. ***(IF = 3.24; Citations = 69)***
56. M. Gleiser, B. Nelson, and **S.I. Walker** (2012) Chiral Polymerization in Open Systems From Chiral-Selective Reaction Rates. Orig. Life Evol. Biosph. 42: 333-346. ***(IF = 1.0)***
57. **S.I. Walker** "Homochirality", In Encyclopedia of Astrobiology. M. Gargaud (ed.) (2011)
58. M. Gleiser and **S.I. Walker** (2010) The Chirality of Life: From Phase Transitions to Astrobiology. Astronomy and Relativistic Astrophysics: New Phenomena and New States of Matter in the Uni- verse Proceedings of the Third Workshop (IWARA07) 17 - 30. ***(Citations = 2)***
59. M. Gleiser and **S.I. Walker** (2009) Toward Homochiral Protocells in Noncatalytic Peptide Systems. Orig. Life Evol. Biosph. 39: 479 - 493. ***(IF = 1.0; Citations = 17)***
60. M. Gleiser, J. Thorarinson, and **S.I. Walker** (2008) Punctuated Chirality. Orig. Life Evol. Biosph. 38: 499 – 508. ***(IF = 1.0; Citations = 34)***
61. M. Gleiser and **S.I. Walker** (2008) An Extended Model for the Evolution of Prebiotic Homochirality: A Bottom-Up Approach to the Origins of Life. Orig. Life Evol. Biosph. 38: 293 – 315. ***(IF = 1.0; Citations = 47)***

IN PRESS

62. T. Fisher‡, H. Kim†, C. Millsaps‡, M. Line and **S.I. Walker** (2022) Inferring Exoplanet Disequilibria with Multivariate Information in Atmospheric Reaction Networks *Astronomical Journal* ***(IF = 6.26, Citations = 1) (accepted, preprint available at arXiv:2104.09776)***

PREPRINTS

63. D.G. Moore†, M. Morales, **S.I. Walker** and G.A. Dolby (2022) The Information Signature of Diverging Lineages, *BioRxiv:* https://doi.org/10.1101/2021.08.30.458276

64. J. Hanson‡, **S.I. Walker** (2021) On the Non-uniqueness Problem in Integrated Information Theory *Preprint on BioRxiv:* https://doi.org/10.1101/2021.04.07.438793 ***(Citations = 3)***
65. S.M. Marshall, D. Moore†, A.R.G. Murray, **S.I. Walker** and L. Cronin (2019) Quantifying the Pathways to Life Using Assembly Spaces. arXiv preprint:1907.04649

EDITED VOLUMES AND BOOKS

1. **S.I. Walker**, G.F.R. Ellis and P.C.W. Davies (eds) From Matter to Life: Information and Causality Cambridge University Press, 2017.
2. **S.I. Walker** and G. Cody (eds) Re-Conceptualizing the Origins of Life Edited volume of Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences
3. **S.I. Walker.** The Hard Problem of Life: book under contract with ***Penguin Riverhead*** on the nature of life and astrobiology (**signed contracts in four other countries, including with Little Brown Books in the UK and contracts in Japan, China and Russia**), forthcoming

BOOK CHAPTERS

*** Prize winning essay. † Walker lab Postdoctoral Fellow. ‡ Walker lab graduate student. ‡† ASU undergrad*

1. G.T. Cooper, **S.I. Walker** and L. Cronin. 2022. A Universal Chemical Constructor to Explore the Nature and Origin of Life. In S. Smoukov, J. Seckbach, J. and R. (eds.). Conflicting Models for the Origin of Life [COLF, Volume in the series Astrobiology Perspectives on Life of the Universe, Scrivener Publishing. *In press*
2. **S.I. Walker** and P.C.W. Davies. 2020 From the Origins of Life to the Nature of Intelligence. Unraveling Complexity: The Life and Work of Gregory Chaitin, pp. 289 – 315.
3. **S.I. Walker**, L. Cronin, A. Drew‡†, S. Domagal-Goldman, T. Fisher‡, M. Line and C. Millsaps‡, 2020. Probabilistic Biosignature Frameworks. *Planetary Astrobiology*, p.477. *Univ. Arizona Press,* 2020.
4. **S.I. Walker** and C. Mathis ‡. Network Theory in Prebiotic Evolution. Prebiotic Chemistry and Chemical Evolution of the Nucleic Acids. Springer Publishing. C.A. Menor Salvan (ed.), 2018.
5. ** **S.I. Walker**, "Bio from Bit" In Wandering Towards a Goal. A. Aguirre, B. Foster and Z. Merali (ed). Springer, 2018.
6. **S.I. Walker** and P.C.W. Davies, "The "Hard Problem" of Life" In From Matter to Life: Informa- tion and Causality S.I. Walker, G.F.R. Ellis and P.C.W. Davies (ed.) Cambridge University Press.

7. **S.I. Walker** "More is not just different, its causal" in Ahead of the Curve: Hidden breakthroughs in the biosciences. M. Levin and D. Adams (eds) IOP Publishing, Bristol UK. 2017.
8. **S.I. Walker**, "The Descent of Math" In Trick of Truth: The Mysterious Connection Between Physics and Mathematics? A. Aguirre, B. Foster and Z. Merali (ed.) Springer, 2016.
9. **S.I. Walker**, "Is Life Fundamental?" In Questioning the Foundations of Physics: Which of our Fundamental Assumptions are Wrong? A. Aguirre, B. Foster and Z. Merali (ed.) Springer, 2014.
10. **S.I. Walker**, "Transition from Abiotic to Biotic: Is There an Algorithm for it?" In Astrobiology: An Evolutionary Approach V. Kolb (ed.) CRC Press, 2014.

TECHNICAL REPORTS

1. S. Domagal-Goldman, N. Y. Kiang, N. Parenteau, D. C. Catling, S. DasSarma, Y. Fujii, C.E. Har- man, A. Lenardic, E. Pall´e, C.T. Reinhard, E.W. Schwieterman, J/ Schneider, H.B. Smith ‡, M. Tamura, D. Angerhausen, G. Arney, V.S. Airapetian, N.M. Batalha, C.S. Cockell, L. Cronin, R. Deitrick, A. Del Genio, T. Fisher‡, D.M. Gelino, J.L. Grenfell, H.E. Hartnett, S. Hegde, Y. Hori, Betu ̈l Kacar, J. Krissansen-Totten, T. Lyons, W. B. Moore, N. Narita, S.L. Olson, H. Rauer, T.D. Robinson, S. Rugheimer, N. Siegler, E.L. Shkolnik, K.R. Stapelfeldt, **S.I. Walker**. (2018) Life Beyond the Solar System: Remotely Detectable Biosignatures. A white paper submitted to the 2018 National Academies of Sciences Study: Astrobiology Science Strategy for the Search for Life in the Universe. arXiv preprint: https://arxiv.org/abs/1801.06714
2. S. Domagal-Goldman, J. Bean, E. Kempton and **S.I. Walker** (2018) A Statistical Search for Life Beyond Earth. "Additional Science Cases" appendix of LUVIOR Interim Report.
3. J.T.W. Goodwin, **S.I. Walker**, S. Amin, G. Armbrust, C.J. Burrows, and D.G. Lynn (2014) NSF/NASA Alternative Chemistries of Life: Empirical Approaches Workshop Report. ISBN: 978- 0-692-24992-5

PATENTS

† Walker lab Postdoctoral Fellow (at time of filing)

1. E. Borriello†, K. Bussey, and **S.I. Walker**. "Systems and methods for steering network dynamics." U.S. Patent Application No. 17/179,091.

POPULAR WRITING AND BOOK REVIEWS

1. A. Frank, D. Grinspoon, **S.I. Walker** Does a Planet Have a Mind of It's Own? The Atlantic, 2022
2. **S.I. Walker** We Need to Change How we Search for Life, Slate Magazine Future Tense, 2020
3. M. Lachmann and **S.I. Walker** Alive ≠ Life, Aeon Magazine, 2019
4. **S.I. Walker** The Origin and Nature of Life on Earth: The Emergence of the Fourth Geosphere (Review) (2017) Physics Today 70, no. 9: 58-58.
5. **S.I. Walker** The New Science of Astrobiology. Visions, Ventures, Escape Velocities: A Collection of Space Futures. E. Finn, J. Eschrich, and J. Ulman (eds). Center for Science and the Imagination, Arizona State University
6. **S.I. Walker** It from Vital Bit. The Rightful Place of Science: Frankenstein. M.K. Halpern, J. Sadowski, and J. Eschrich (eds). Consortium for Science, Policy, Outcomes
7. **S.I. Walker** (2014) Little Green Men Might Not Be So "Green", Slate FutureTense

PUBLISHED CONFERENCE ABSTRACTS

∗∗ Best Paper Award, † Walker lab Postdoctoral Fellow. ‡ Walker lab graduate student. ‡† ASU undergrad

1. P. Vergeli‡, B. Karas‡, H. Hartnett, H. Kim† and **S.I. Walker** (2021) Bulletin of the American Astronomical Society 53 (3), 1218.
2. T. Fisher‡, M. Line, H. Kim† and **S.I. Walker** (2021) Bulletin of the American Astronomical Society 53 (3), 1010.
3. **S.I. Walker** (2021) Building Consensus with Statistical Biosignatures. Bulletin of the American Astronomical Society 53 (3), 1113.
4. H. Kim†, J. Malloy‡ and **S.I. Walker** (2020) Emergence of Chiral Characteristics across Biochemical Networks on Earth, AGU Fall Meeting Abstracts, P064- 0003.
5. H. Furukawa‡, H. Kim†, **S.I. Walker**, C. Mathis (2020) Big Data Approaches: Chemical Complexity as a Theoretical Basis for Life Detection, AGU Fall Meeting Abstracts, P024- 0011.
6. **S.I. Walker**, H. Kim†, H. Furukawa‡, D.C. Gagler, B. Karas, J. Malloy, V. Mierzejewski and P. Vergeli (2020) Big Data Approaches to Statistically Characterizing Biochemistries in the Context of their Planetary Environment, AGU Fall Meeting Abstracts, P064-0002.
7. H.Furukawa‡, **S.I. Walker** and H. Kim† (2020) Chemical Complexity: Implications for Bio/Technosignatures. Technoclimes 2020. https://doi.org/10.1002/essoar.10503908.1
8. T. Fisher‡, **S.I. Walker**, M. Line, H. Kim† and C.Millsap‡ (2020) New Statistical Measures of Atmospheric Disequilibria and Implications for Detecting Life and Technology. Technoclimes 2020. https://doi.org/10.1002/essoar.10503900.1

9. H.Furukawa‡, **S.I. Walker** (2020) Molecular Weight Distribution: Universality Across Life and Potential for Statistical Biosignatures, International Astronautical Congress, held online
10. **S.I. Walker** (2020) The Natural History of Information, Artificial Life 2020, held online.
11. **S.I., Walker** (2019) Systems Biochemistry on Enceladus. AGU Fall Meeting Abstracts 2019, P24A-02.
12. H.E. Hartnett, N.R. Hinkel, A.D. Anbar, S.J. Desch, T. Fisher‡, H. Furukawa‡, D. Glaser, J.G. Okie, C.T. Unterborn, P. Vergeli‡, **S.I. Walker** and P. Young (2019) The Biogeosciences are a Critical Step on the Path Toward Detecting Life on Exoplanets. AGU Fall Meeting Abstracts 2019, B13C-11.
13. ** H.B.Smith‡, H.Kim† **S.I. Walker** (2019) Biochemical Networks Display Universal Structure Across Projections and Levels of Organization. Artificial Life 2019. held July 26-30, 2019 in New- castle, UK.
14. T. Fisher‡, **S.I. Walker**, M. Line, H. Kim† and A.Drew‡ (2019) Atmospheric Chemical Reaction Network Topology as an Indicator of Disequilibrium: Implications for Biosignature Detection. Proceedings of 2019 Astrobiology Science Conference.
15. **S.I. Walker** (2019) Intelligence as a Planetary Process, Proceedings of 2019 Astrobiology Science Conference.
16. D.C. Gagler‡, H. Kim† and **S.I. Walker** (2019) Investigating the Role of Oxidation-Reduction Reactions in Biochemical Network Structure Across Levels of Organization, Proceedings of 2019 Astrobiology Science Conference.
17. H. Kim† and **S.I. Walker** (2019) Characteristic Chiral Nature of Hierarchical Biochemical Networks, Proceedings of 2019 Astrobiology Science Conference.
18. **S.I. Walker,** S. Johnson, D. Des Marais, E. Schweiterman, M.N. Parenteau, C.T. Reinhard, and V.S. Meadows (2019) Plenary Session: Frontiers in Biosignature Science, Proceedings of 2019 Astrobiology Science Conference.
19. C. Harman, E Schwieterman, V. Airapetian, D. Apai, G. Arney, D. Buzasi, H. Cadillo-Quiroz, B. Danchi, S. Domagal-Goldman, C. Dong, C. Dressing, R. Felton, T. Fisher†, K. France, D. Gelino, H.E. Hartnett, P. Kalas, S.R. Kane, N.Y. Kiang, J.S. Kim, R. Kopparapu, M. López-Morales, J. Lustig-Yaeger, N. Parenteau, S. Redfield, C. Reinhard, T.D. Robinson, S. Rugheimer, L. Sohl, A. Solmaz, K. Stassun, M. Trainer, A.R. Truitt, K. Tsigaridis, K. Wagner, **S.I. Walker** (2019) A Balancing Act: Biosignature and Anti-Biosignature Studies in the Next Decade and Beyond. Bulletin of the American Astronomical Society 51 (3), 414.
20. D.G. Moore †, **S.I. Walker** and M. Levin (2018) Pattern Regeneration in Coupled Networks, Artificial Life 2018 held in Tokyo Japan Jul. 23-27, 2018.
21. H. Furukawa‡ and **S.I. Walker** (2018) Major Transitions in Planetary Evolution, Artificial Life 2018 held in Tokyo Japan Jul. 23-27, 2018.
22. S.J. Desch, H.E. Hartnett, S. Kane, and **S.I. Walker** (2017) Detectability, Not Habitability. Habitable Worlds 2017: A Systems Science Workshop, held Laramie, Wyoming Nov. 13 - 17, 2017.

23. T.M. Fisher‡, **S.I. Walker**, S.J. Desch, H.E. Hartnett and S. Glaser‡ (2017) Limitations of Primary Productivity on "Aqua Planets": Implications for Detectability. Habitable Worlds 2017: A Systems Science Workshop, held Laramie, Wyoming Nov. 13 - 17, 2017.
24. T.M. Fisher‡, H.B.Smith‡, C. Ruiz‡†, M. Line, J. Lyons and S.I. Walker (2017) The Topology of Atmospheric Chemical Reaction Networks: A Potential New Biosignature for Exoplanets Astrobiology Science Conference 2017. held Apr. 24-28, 2017 in Mesa, AZ.
25. H.Kim†, H.B.Smith‡, J. Raymond and **S.I. Walker** (2017) Constraints that Deconstrain: Characterizing the Biological Hierarchy Across Levels of Organization Astrobiology Science Conference 2017. held Apr. 24-28, 2017 in Mesa, AZ.
26. C. Mathis‡ and **S.I. Walker** (2017) Autocatalytic sets and the origins of life Astrobiology Science Conference 2017. held Apr. 24-28, 2017 in Mesa, AZ.
27. H.B.Smith‡, W. Hordjik, S. Otto and **S.I. Walker** (2017) Computational Insights into the Emergence of Replication, Heredity and Speciation in Abiotic Systems Astrobiology Science Conference 2017. held Apr. 24-28, 2017 in Mesa, AZ.
28. A.Adams‡ and **S.I. Walker** (2017) Understanding Real-World Open-Ended Systems: A League of Legends Adventure. Astrobiology Science Conference 2017. held Apr. 24-28, 2017 in Mesa, AZ.
29. H.Kim†, P.C.W. Davies and **S.I. Walker** (2016) Informational architecture to characterize controllability of biological networks. Conference on Complex Systems 2016. held Amsterdam, The Netherlands 19-22 Sept. 2016.
30. H. Smith‡, H.Kim†, J. Raymond and **S.I. Walker** (2016) Network theoretic constraints on metabolic diversity explain universal features of life on Earth. Conference on Complex Systems 2016. held Amsterdam, The Netherlands 19-22 Sept. 2016.
31. A.Adams‡, H. Zenil, P.C.W. Davies and **S.I. Walker** (2016) Quantifying Non-trivial Open-Ended Evolution Reveals Necessary and Sufficient Conditions. Second Workshop on Open-Ended Evolution (OEE2) held at Artificial Life XV, Cancun Mexico, July 4th ? 8th, 2016.
32. H.Kim†, H. Smith‡, J. Raymond and **S.I. Walker** (2016) Multilevel Evolution of Chemical Reaction Networks. NetSci 2016. Seoul, South Korea. held May 30 - Jun. 3, 2016.
33. T.P. Pavlic, **S.I. Walker** and S.C. Pratt (2016) From Social Insects to Smart, Flexible, Adaptive Teams of Robots: The Biomechanics of Group Decision-Making. 2016 International Congress on Entomology.
34. **S.I. Walker** (2015) Self-Referencing Dynamical Systems Conference on Complex Systems 2015. held Sept. 28 - Oct.2, 2015 in Tempe AZ.
35. **S.I. Walker**, H.J. Kim†, P.C.W. Davies (2015) The Informational Architecture of the Cell. Conference on Complex Systems 2015. held Sept. 28 - Oct.2, 2015 in Tempe AZ.
36. Adams‡, **S.I. Walker** (2015) Implications of Open-Ended Evolution in a Deterministic Universe Conference on Complex Systems 2015. held Sept. 28 - Oct.2, 2015 in Tempe AZ.

37. Adams‡, H. Zenil and **S.I. Walker** (2015) Open-Ended Evolution in a Deterministic Cellular Automata Universe Conference on Complex Systems 2015. held Sept. 28 - Oct.2, 2015 in Tempe, AZ.
38. H.B. Smith‡, H.J. Kim†, J. Raymond and **S.I. Walker** (2015) The Evolution of Metabolic Com- munities: Computational Models and Empirical Results. Conference on Complex Systems 2015. held Sept. 28 - Oct.2, 2015 in Tempe AZ.
39. H.J. Kim†, P.C.W. Davies and **S.I. Walker** (2015) Informational Architecture of Biological Networks. Conference on Complex Systems 2015. held Sept. 28 - Oct.2, 2015 Tempe AZ.
40. **S.I. Walker** (2015) Recycling of Early Functional Biopolymers and Implications for the Emergence of Life Astrobiology Science Conference 2015: Habitability, Habitable Worlds and Life. held June 15-19, 2015 in Chicago IL.
41. P. Esch and **S.I. Walker** (2015) Computational Models for the Coexistence and Competition of Mirror-Image Lifeforms Astrobiology Science Conference 2015: Habitability, Habitable Worlds and Life. held June 15-19, 2015 in Chicago IL.
42. H.J. Kim†, P.C.W. Davies and **S.I. Walker** (2015) Informational Architecture of Biological Networks. Astrobiology Science Conference 2015: Habitability, Habitable Worlds and Life. held June 15-19, 2015 in Chicago IL.
43. H.B. Smith‡, H.J. Kim†, J. Raymond and **S.I. Walker** (2015) The Evolution of Metabolic Communities: Computational Models and Empirical Results. Astrobiology Science Conference 2015: Habitability, Habitable Worlds and Life. June 15-19, 2015 Chicago IL.
44. Mathis‡, T. Bhattacharya and **S.I. Walker** (2015) The Emergence of Life as a First Order Phase Transition. Astrobiology Science Conference 2015: Habitability, Habitable Worlds and Life. held June 15-19, 2015 in Chicago IL.
45. Adams‡, H. Zenil, P.C.W. Davies and **S.I. Walker** (2015) Emergence of Open-Ended Evolution in a Minimalistic Model of Interactive Cellular Automata with Global Control. Astrobiology Science Conference 2015: Habitability, Habitable Worlds and Life. held June 15-19, 2015 in Chicago IL.
46. L. Horodyskyj, **S.I. Walker** and J.H. Forrester (2014) Outreach Opportunities for Early Career Scientists at the Phoenix Comicon. AGU Fall Meeting Abstracts 2014, ED41B-05.
47. S.M. Som, **S.I. Walker**, E. Miller, M. Anbar, B. Kacar, J.H. Forrester (2014) Evaluating Virtual STEM Mentoring Programs: The SAGANet.org Experience. AGU Fall Meeting Abstracts 2014, ED31B-3439.
48. H.J. Kim†, P.C.W. Davies and **S.I. Walker** (2014) Informational Architecture of the Fission Yeast Cell-Cycle Regulatory Network. ALIFE 14: The Fourteenth Conference on the Synthesis and Simulation of Living Systems, Vol. 14, pp. 569- 570.
49. **S.I. Walker** and P.C.W. Davies (2012) The Algorithmic Origins of Life. Astrobiology Science Conference 2012: Exploring Life: Past and Present, Near and Far, held April 16-20, 2012 in Atlanta, GA.

50. **S.I. Walker** (2012) Rise of information in the origins of life. Astrobiology Science Conference 2012: Exploring Life: Past and Present, Near and Far, held April 16-20, 2012 in Atlanta, GA.
51. **S.I. Walker** and P.C.W. Davies (2012) Rise of information in the origins of life. Abstracts of papers of the American Chemical Society Vol 243. 1155 16TH ST, NW, Washington, DC 20036 USA: Amer Chemical Soc, 2012.
52. **S.I. Walker**, N.V. Hud and M.A. Grover (2012). Model for the emergence of the first functional polymers during sequence independent replication. Abstracts of papers of the American Chemical Society Vol 243. 1155 16TH ST, NW, Washington, DC 20036 USA: Amer Chemical Soc, 2012.
53. **S.I. Walker** (2011) Collective Dynamics, Functional Evolution, and the Emergence of Life. Abstracts of Astrobiology Graduate Conference (AbGradCon) 2011, held June 5 - 8 2011 at Montana State University, Bozeman, Montana. Astrobiology 11(4): 367-389, AbAGC11-t34.
54. **S.I. Walker** and M. Gleiser (2010) Modeling Dynamics and Environmental Influence on the Emergence of Prebiotic Homochirality: From Chiral Symmetry Breaking to Emergent Biology. Astrobiology Science Conference 2010: Evolution and Life: Surviving Catastrophes and Extremes on Earth and Beyond, held April 26-20, 2010 in League City, Texas. LPI Contribution No. 1538, p.5271

TEACHING and MENTORING

ASU TEACHING

- Spring 2022 - sabbatical
- Fall 2021 SES 498/591 – Aliens and AI seminar Class
- Fall 2017, 2018, 2020 - Instructor, GLG 460: Astrobiology
- Spring 2018, 2019, 2020, 2021 - Instructor, SES 311: Astrobiology
- Fall 2019 – Instructor, SES 498/591 Astrophysics Seminar
- Fall 2018 - Instructor, SES 106: Habitable Worlds
- Spring 2016- Instructor, SES 494/598: Grad Seminar (3 credits): Fundamentals of Complexity
- Spring 2016 – Instructor, SES 491/591 Grad Seminar (1 credit): Origins of Life
- Fall 2014, Fall 2015 - Instructor, AST111: Introduction to Solar Systems Astronomy Instructor, AST113: Astronomy Lab (online)

OTHER TEACHING

- "Life as the Next Frontier in Physics: Exploring the New Science of Astrobiology", Online course developed for mathematically talented high school students from across the world as part of the World Science Festival's **World Science Scholars**

Program, Available here: https://worldscienceu.com/courses/a-new-approach-to-the-search-for-extraterrestrial-life-sara-walker/

- Complexity Explorer Course on the "Origins of Life", I produced four lectures for a course on the Santa Fe Institute's online educational platform. The course has taught thousands of students about cutting-edge approaches to origins of life research. My lectures have **>5K views** on YouTube.

CURRENT SENIOR STAFF AND POSTDOCTORAL SCHOLARS

- Dr. Hyunju Kim, Assistant Research Professor, School of Earth and Space Exploration & Beyond Center for Fundamental Concepts in Science
- Dr. Daniel Czegel, Research Specialist
- Dr. Cole Mathis, NASA Postdoctoral Program Fellow
- Dr. Kirtland Robinson, Postdoctoral Fellow, Beyond Center & School of Earth and Space Exploration

CURRENT GRADUATE STUDENTS ADVISED (PRIMARY ADVISOR)

- Megan Bromley, School of Earth and Space Exploration
- Hannah Dromiack, Department of Physics
- Swanand Khanapurkar, Department of Physics
- Teresa Fisher, PhD candidate, School of Earth and Space Exploration
- Hikaru Furukawa, PhD candidate, School of Earth and Space Exploration
- John Malloy, School of Earth and Space Exploration
- Veronica Mierzejewski, School of Earth and Space Exploration
- Yanbo Zhang, School of Earth and Space Exploration
- Camerian Milsaps, School of Earth and Space Exploration
- Pilar Vergeli, School of Earth and Space Exploration

CURRENT UNDERGRADUATE STUDENTS ADVISED

† Honors Thesis Student. ‡ NASA Space Grant Student

- † Annemarie Abeyta, School of Earth and Space Exploration (2022 – present)
- † Sonakshi Sharma, School of Earth and Space Exploration (2021 – present)
- † Sydney Jones, School of Earth and Space Exploration (2021 – present)
- ‡Santana Solomon, NASA Space Grant Intern 2020-2021
- Rachel Philips, Department of Physics (2020 – present)
- Adrianna Matthews, School of Earth and Space Exploration (2020 – present)
- Searra Foote, School of Earth and Space Exploration (2019 – present)

CURRENT INTERNATIONAL MENTEES

- Pritvik Sinhadc, high school student in U.A.E. (2020 – present)
- Ceren Neural, undergraduate student in Turkey (2020 – present)
- Estelle Janin, undergraduate at University College London (2021-present)

WALKER GROUP ALUMNI (GRADS AND POSTDOCS)

- Dr. Alyssa Adams, PhD in Physics (Fall 2017), next position - data engineer at VEDA Data Solutions. Dissertation title *"The Physics of Open-Ended Evolution"*, now a CIBM Postdoctoral Fellow at the University of Wisconsin Madison
- Dr. Cole Mathis, PhD in Physics (Spring 2018), next position - postdoctoral research at University of Glasgow. Dissertation title *"On the Origin of the Living State"*, now a NASA Postdoctoral Program Fellow
- Dr. Harrison Smith, PhD in School of Earth and Space Exploration (Fall 2018) next position - postdoc at Earth-Life Science Institute, at Tokyo Tech. Dissertation title: *"Biochemical Networks Across Planets and Scales", now a research scientist at Tokyo Tech*
- Dylan Gagler, MSc in School of Earth and Space Exploration *"Universal Biochemistry within and Across Biological Domains and Levels of Organization on Earth"*, now working as a bioinformatician in NY
- Dr. Gabriele Valentini, Postdoctoral Fellow in School of Earth and Space Exploration (completed Spring 2020) next position – Research Scientist, School of Life Sciences, Arizona State University
- Dr. Enrico Borriello, Postdoctoral Fellow in the Beyond Center for Fundamental Concepts in Science, next position – Research Scientist, Center for Global Biosocial Complex Systems
- Dr. Siyu Zhou, PhD in Physics, Department of Physics (Fall 2020), now part of Microsoft's Turing Team
- Dr. Jake Hanson, PhD in School of Earth and Space Exploration (Spring 2021), now a data analyst in the Phoenix area
- Dr. Douglas Moore, Postdoctoral Scholar, Beyond Center for Fundamental Concepts in Science (completed Fall 2021), now at *39Alpha*

PAST GRADUATE STUDENTS ADVISED (COMMITTEE MEMBER)

- Tucker Ely, School of Earth and Space Exploration (2nd project advisor)
- Luke Tremblay, MSc School of Earth and Space Exploration (committee member)
- Kevin Aiello, School of Life Sciences (committee member)
- Matthew Kellom, PhD School of Earth and Space Exploration (committee member)
- Steven Glaser, School of Earth and Space Exploration (2nd project advisor)
- Alicia Gonzalez, School of Earth and Space Exploration (2nd project advisor)
- Nathan Smith, School of Earth and Space Exploration (committee member)

- Eric Alsop, PhD School of Earth and Space Exploration (committee member)
- Samuel Rochelle, School of Earth and Space Exploration (2nd project advisor)
- Audrey Horne, School of Earth and Space Exploration (2nd project advisor)
- Ryan Brosch, Department of Physics (rotation project advisor)
- Varda Fagir Hagh, Department of Physics (rotation project advisor)
- Rachel Hoskins, ASU Graduate College (research advisor)

PAST UNDERGRADUATE RESEARCHERS ADVISED

† Honors Thesis Student. ‡ NASA Space Grant Student

- Hannah Dromiack, Department of Physics NASA Space Grant Intern 2019-2020 (now graduate student in Walker group)
- ‡Alexa Drew, School of Earth and Space Exploration, NASA Space Grant Intern 2017-2018
- Johnny Surtoka, School of Earth and Space Exploration (2019 – 2020)
- ‡Angelica Brenner, SESE/Physics & Barrett Honors College NASA Space Grant Intern 2016-2017
- ‡Coral Ruiz, School of Earth and Space Exploration NASA Space Grant Intern 2016-2017
- Bradley Karas, School of Earth and Space Exploration (now graduate student in Walker group)
- ‡Colin Ganser, NASA Space Grant Intern Fall 2016
- Kevin Smith, School of Earth and Space Exploration 2016
- Emmanuel Banda, Economics 2016
- Indrajit Badvaram, Department of Physics 2016
- ‡Patricia Esch, School of Life Sciences & Barrett Honors College, NASA Space Grant Intern 2014-2015
- Candace Ashley, School of Earth and Space Exploration, 2014-2015

LECTURES and EVENTS

CONFERENCE, WORKSHOP & TECHNICAL PRESENTATIONS

**** Keynote/Plenary, ** Invited Talk, * Contributed Talk, †Panel*

1. **Simulating Life: Can it Be Done? Belstein Bozen Symposium on AI and Simulation in Science, Germany , May 2022
2. **False Positives and Testing the Alien Hypothesis, Astrobiology Science Conference, Atlanta GA, May 2022

3. ***Hard Problems: Life and Consciousness, The Science of Consciousness, U. of Arizona, Tuscon AZ, April 2022
4. **Towards a Statistical Mechanics of Biochemistry, Americal Physical Society March Meeting, Chicago IL (virtual participant), March 2022
5. ** Biosignatures Strategies and Standards of Life Detection, National Academy of Sciences - Committee on Astrobiology and Planetary Sciences Fall Meeting, November 2021
6. ***Planetary Systems Biochemistry: Inferring the Laws of Life at a Planetary Scale, First Polish Astrobiology Society Conference, September 2021 (virtual)
7. **Seeing the Fundamental Physics of Life in Molecules, Physics of Emergent Behavior III: Origins of Life to Multicellularity, University College London, London UK, July 2021 (virtual)
8. **Planetary Systems Biochemistry, NASA Enigma Astrobiology Symposium, Rutgers University, New York, June 2021 (online)
9. ***Life is What? Origins of Life and Self-Organizing Systems, Center for Physics of Biology Function, CUNY-Princeton, Mar 2021 (online) (**1.7k+ views** on YouTube)
10. **Breathing Life into the Laws of Physics, Origins of Life: The Actual and the Possible, Santa Fe Institute, February 2021 (online)
11. *Planetary Systems Biochemistry, Habitable Worlds, February 2021
12. *Statistical Signatures of Biospheres and Technospheres, Technoclimes, August 2020
13. ***The Natural History of Information, Conference on Artificial Life, Montreal Quebec, Canada (moved online) July 2020
14. ***The "Hard Problem" of Life, International Conference on Complex Systems (ICCS), New England Complex Systems Institute, Cambridge MA (moved online) July 2020
15. ***Future Directions in Exoplanet Biosignatures, Exoplanets 3, Heidelberg Germany (moved online) July 2020
16. **Systems Biochemistry on Enceladus, AGU Fall Meeting, Dec. 2019
17. **Physics of Life, Information Processing and Life Working Group, Santa Fe Institute (virtual), Dec. 2019
18. ***Networking Life on Mars, Veriditas Workshop, Cambridge MA, Nov. 2019
19. **Evolving Chemical Systems, Evolving Chemical Systems Working Group, Santa Fe Institute (virtual), Nov. 2019
20. ***Complexity on Earth and Beyond: Searching for Life in the Universe, Conference on Complex Systems, Singapore, Oct. 2019
21. ** Planetary Systems Biochemistry: Inferring the Laws of Life at a Global Scale, Astrobiology Gaia Symposium, Library of Congress, Washington DC Sept 2019
22. **Information, Criticality and Life, StuFest: Stuart Kauffman's 80th Birthday Celebration, Santa Fe Institute, Santa Fe NM, Aug. 2019
23. **Bio from Bit, Mind Matters: Foundational Questions in Science Institute Conference, Tuscany Italy, July 2019 (lecture has **2.4k+ views** on YouTube)

24. †Panel on Free Will with Sean Caroll, David Haussler, Jan Wallaczek, Sara Walker, Foundational Questions in Science Institute Conference, Tuscany Italy, July 2019 (discussion has **4.4k+ views** on YouTube)
25. **Kavli Frontiers: Exoplanet Future Perspectives, NASA TESS Science Conference, Massachusetts Institute of Technology, July 2019
26. ***Statistical Frameworks for Life Detection, Astrobiology Science Conference, Seattle WA, June 2019
27. **Intelligence as a Planetary Process Astrobiology Science Conference, Seattle WA, June 2019
28. *** Planetary Systems Biochemistry: Inferring the Laws of Life at a Global Scale Evolution of Complex Life Symposium, Georgia Institute of Technology, Atlanta GA, May 2019
29. ** Information is Life. Fake News? Symposium, Arizona State University, Apr. 2019
30. *** Information Across Living and Non-Living Collectives, Evolution of Complex Life Conference, Georgia Institute of Technology, Atlanta GA, Apr. 2019
31. **Searching for "Laws of Life": A Guidebook to Reprogramming Planets Breakthrough Discuss, University of California Berkeley, Berkeley CA, Apr. 2019 (**2.3k+ views** on YouTube)
32. ** Living a Meaningful Life, The Meaning of Meaning Beyond Center Workshop, Arizona State University, Mar. 2019
33. *** Planetary Systems (Bio)Chemistry: Inferring the "Laws of Life" at a Global Scale, ExplorOrigins Symposium, Georgia Institute of Technology, Mar. 2019
34. *** Causal Structure and the Physics of Life, Symposium on Comparative Emergence, Earth-Life Science Institute, Tokyo Tech, Tokyo Japan Jan. 2019
35. **Life as an Outlier: How Biology Plays the Margins of Probability Space, Workshop on Quantum Criticality and the Secret Electric Life of Cells, Beyond Center, ASU, Tempe AZ, Nov. 2018
36. **Abstract Models of Life (applied to origins and transitions) Major Transitions in Life: Origins to Translation, Santa Fe Institute, Santa Fe NM Oct. 2018
37. **The Physics of Life and Intelligence, NASA Technosignatures Worksop, Lunar and Planetary Science Institute, Houston TX, Sept. 2018
38. **Bio from Bit, Gordon Research Conference on Unifying Ecology Across Scales, Biddeford, ME Jul. 2018
39. *** New Physics from Systems Chemistry: Realizing the Goal to Understand the 'Laws of Life, Gordon Research Conference on Systems Chemistry, Newry, ME Jul. 2018
40. † Origins of Life, 4D Workshop: Deep-time Data-driven Discovery and the Evolution of Earth, Jun. 2018
41. † Possibilities for Non-Terran Life, Breakthrough Discuss, Stanford University, Stanford CA, Apr. 2018
42. *** Bio from Bit, The Science of Consciousness, University of Arizona, Tuscon, AZ, Apr. 2018

43. ** Systems Biosignatures, National Academies of Astrobiology Sciences Study, Washington DC, Mar. 2018
44. *** Conceptual Issues in Astrobiology, Astrobiology Science Conference, Mesa AZ Apr. 2017
45. * The Topology of Atmospheric Chemical Reaction Networks: A Potential New Biosignature for Exoplanets, Astrobiology Science Conference, Mesa AZ, Apr. 2017
46. * Constraints that Deconstrain: Biological Hierarchy Across Levels of Organization Astrobiology Science Conference, Mesa AZ, Apr. 2017
47. ** Life, Hierarchies and Top-down Causation, Statistical Physics, Information Processing and Biology Workshop, Santa Fe Institute, Santa Fe NM, Nov. 2016
48. ***Statistical Signatures of Life, NASA NExSS Exoplanet Biosignatures Workshop without Walls, Seattle WA, Jul. 2016
49. **Informational Signatures of Life, Power of Information Workshop, Beyond Center, Arizona State University, Mar. 2016
50. ***Modeling the Origin of Life, Keynote address, Re-Conceptualizing the Origin of Life, Carnegie Institution, Washington DC, Nov. 2015
51. **Coarse-graining, Open-Ended Evolution and Innovation, Arrow of Complexity Workshop, Santa Fe Institute, Santa Fe, NM, Oct. 2015
52. **The Informational Architecture of the Cell, 2015 American Physical Society Four Corners Meeting, Tempe AZ, Sept. 2015
53. **Towards a Mathematical Definition of the Transition from Non-life to Life 2015 Conference on Complex Systems (CCS '15), Tempe AZ, Sept. 2015
54. **The Informational Architecture of the Cell, 2015 Conference on Complex Systems (CCS '15), Tempe AZ, Sept. 2015
55. *Self-Referencing Dynamical Systems, 2015 Conference on Complex Systems (CCS '15), Tempe AZ, Sept. 2015
56. † Re-Conceptualzing the Origin of Life, SciFoo, Google Campus, Mountain View CA, June 2015
57. **Recycling of Functional Biopolymers and Implications for the Origin of Life Astrobiology Science Conference, Chicago IL, June 2015
58. **Towards a Physics of Life, Nature as Computation Workshop, Beyond Center, Arizona State University, May 2015
59. **The Informational Architecture of Life, Workshop on Schrodinger's Paradox, Santa Fe Institute, Santa Fe NM, Nov. 2014
60. **What is life, and how did it emerge? Information, Causality and Life Workshop, Beyond Center, Arizona State University, Sept. 2014
61. †The Origin of Life, SciFoo, Google Campus, Mountain View CA, Aug. 2014
62. **The Emergence of Life as a Transition in Causal and Informational Architecture The Power of Information, Oxford University, Oxford UK, Mar. 2014
63. *Mentoring through Social Media: Connecting Scientists to Students Global STEMX Conference (virtual), Oct. 2013

64. **Chemistry, Complexity and the Arrow of Time, Thermodynamics, Disequilibrium and Evolution Focus Group Meeting, Florence Italy (virtual), Oct. 2013
65. ***What Can Astrobiology Teach Us About Cancer? , Plenary talk, 4th Annual Physical Sciences - Oncology Centers (PS-OCs) Network Investigators' Meeting, Scottsdale AZ, Apr. 2013
66. **The Algorithmic Origins of Life, Workshop on the Origins of Life, Princeton Center for Theoretical Science, Princeton NJ, Jan. 2013
67. ** The Way Ahead . . . Workshop on Oxidative Stress and the Deep Evolutionary Roots of Cancer, Beyond Center for Fundamental Concepts in Science, Arizona State University, Tempe AZ, Nov. 2012
68. **The Information Hierarchy, Chemical Evolution, and the Origin of Life, Workshop on Evolutionary Dynamics and Information Hierarchies, Aspen Center for Physics, Aspen CO, Sept. 2012
69. *Evolutionary Transitions and Top-down Causation, Artificial Life XIII: The 13th International Conference on the Simulation and Synthesis of Living Systems, East Lansing MI, Jul. 2012
70. **Non-life to Life: Is it all about Information Flow? May 2012 Workshop on the Origins and Nature of Biological Information, Beyond Center for Fundamental Concepts in Science, Arizona State University, Tempe AZ, May 2012
71. *A Series of One-Way Missions to Explore and Colonize Mars, Global Space Exploration Conference, L'Enfant Plaza Hotel, Washington DC , May 2012
72. **Is There a Physics of Intelligence? 2nd Intelligence in Astrobiology Virtual Workshop, Georgia Tech, Atlanta GA , Apr. 2012
73. *The Algorithmic Origins of Life, Astrobiology Science Conference, Georgia Tech Hotel & Conference Center, Atlanta GA, Apr. 2012
74. **The Rise of Information in the Origins of Life, Astrobiology Science Conference, Georgia Tech Hotel & Conference Center, Atlanta GA, Apr. 2012
75. *The Rise of Information in the Origins of Life, American Chemical Society Spring Meeting 2012: The Chemistry of Life, San Diego CA, Mar. 2012
76. **Is There a Physics of Intelligence? 1st Intelligence in Astrobiology Virtual Workshop, Arizona State University, Tempe AZ, Feb. 2012
77. Steps Toward Life: A Model for the Initiation of Prebiotic Sequence Evolution Origin of Life Gordon Research Seminar and Conference, Galveston TX, Jan. 2012
78. Emergence of Population Structure and Functional Evolution in Simulations of Environmentally Driven Replication Origins 2011, Montpellier France (not attending), Jul. 2011
79. *Collective Dynamics, Functional Evolution, and the Emergence of Life Astrobiology Graduate Student Conference (AbGradCon), Bozeman MT, Jun. 2011
80. *Astrobiology Research Focus Group Workshop 2011 Astrobiology Graduate Student Conference (AbGradCon), Bozeman MT, Jun. 2011
81. *Information and the Origin of Life, Biophest, Department of Physics, Arizona State University, Tempe AZ, Apr. 2011

82. Modeling Dynamics and Environmental Influence on the Emergence of Prebiotic Homochirality: From Chiral Symmetry Breaking to Emergent Biology, 2010 Astrobiology Science Conference, League City TX, Apr. 2010
83. **Could the First Replicator Survive Enantiomeric Poisoning? Workshop on Homochirality in Biology, Beyond Center for Fundamental Concepts in Science, Arizona State University, Tempe AZ, Mar. 2010
84. From Prebiotic Chemistry to Biology: Modeling the Emergence of Protocells in Early Earth, Origin of Life Gordon Research Seminar and Conference, Galveston TX, Jan. 2010
85. The Chirality of Life: From Phase Transitions to Astrobiology, Astrobiology Graduate Student Conference (AbGradCon), U. of Washington, Seattle, WA, July 2009
86. From Prebiotic Chemistry to Biology: Modeling the Emergence of Protocells in Early Earth, The Search for Life in the Universe, Space Telescope Science Institute, Baltimore, MD May 2009
87. The Chirality of Life: From Phase Transitions to Astrobiology, The Search for Life in the Universe, Space Telescope Science Institute, Baltimore, MD, May 2009
88. *Chiral Symmetry Breaking and Emergent Protocells, Greater Boston Area Statistical Mechanics Meeting, Brandeis University, Waltham, MA, Oct. 2008
89. ** Right versus Left: Why Bigger is Better (. . . but not always enough), Origins of Homochirality Conference, Nordic Institute for Theoretical Physics, Stockholm, Sweden, Feb. 2008
90. **Punctuated Chirality, Origins of Homochirality Program, Nordic Institute for Theoretical Physics, Stockholm, Sweden, Feb. 2008
91. *The Chiral Origins of Life, Greater Boston Area Statistical Mechanics Meeting, Brandeis University, Waltham, MA, Oct. 2007
92. Evolution of Prebiotic Homochirality: A Field Theory Approach to the Origin of Life Arts & Sciences Graduate Poster Session, Dartmouth College, Hanover, NH, May 2007

INVITED SEMINARS, COLLOQUIA and LECTURES

93. Hard Problems: Life, Matter, Mind, McMaster University, Mar. 2022 (canceled due to Covid, to be rescheduled)
94. Life is what?!, Astrophysics Colloquium, University of Maryland, Feb. 2022 (virtual)
95. Life is what?!, Frontiers in Biology Lecture, Stanford University, Feb. 2022 (virtual)
96. Life is what?!, Astrophysics Colloquium, Florida State University, Jan. 2022 (virtual)
97. The Physics of Us, Troublemaker Talk, ***Google X***, December 2021 (virtual)
98. Life is what?!, Colloquium, Perimeter Institute for Theoretical Physics, Nov 2021 (virtual)
99. Inferring the laws of life at a Planetary Scale, Astro Seminar, Université de Montréal Nov 2021 (virtual)

100. Planetary Systems Biochemistry: Inferring the laws of life at a Planetary Scale, Kavli Institute IPMU Colloquium (Tokyo), Nov 2021 (virtual)
101. Planetary Systems Biochemistry, Astrobiology Colloquium, University of Washington, Nov 2021 (virtual)
102. Astrobiology as the Search for Complexity in the Universe, Making Sense of Complexity - SCAS lectures series, Arizona State University, Oct 2021 (virtual) (**461 view** on YouTube)
103. Life is What? Complex Multilayer Networks Lab, Fondazione Bruno Kessler, Trento, Italy, Apr 2021 (virtual)
104. Life is What? BCXT Early Career Seminar, University of Illinois, Mar 2021 (virtual)
105. Life is What? Keck Science Department, Keck Colleges, Mar 2021 (virtual)
106. Hard Problems: Life and Consciousness, Mathematical Consciousness Seminar Series, Mar 2021 (virtual) (lecture has **2.2k+ views** on YouTube)
107. Universality in Biochemistry: Searching for Principles, Build-a-Cell Seminar, Mar 2021 (virtual)
108. Planetary Systems Biochemistry: Inferring the "laws of life" at a Planetary Scale, European Space Agency Advanced Concepts Team, Dec 2020 (virtual)
109. Inferring the "laws of life" at a Planetary Scale, University of Rochester Physics and Astronomy, Oct 2020 (virtual)
110. Inferring the "laws of life" at a Planetary Scale, University of Chicago Origins of Life Seminar Series, Oct 2020 (virtual) (lecture has **3.4k+ views** on YouTube)
111. Inferring the "laws of life" at a Planetary Scale, UC Berkeley-UCLA-JPL joint Planetary Sciences Seminar, Oct 2020 (virtual)
112. Life is What? Berkeley Center for Human-AI Interaction, University of California Berkeley, Oct 2020 (virtual)
113. Life is What? Seminar, Department of Chemistry, Florida Institute of Technology, Melbourne FL, Sept. 2020 (virtual)
114. Life is What? Physics Colloquium, California Institute of Technology, Pasadena CA, Dec. 2019
115. Bio from Bit, Synthetic Biology Seminar, National Institute of Standards and Technology, Bethesda MD, Oct. 2019
116. Planetary Systems Biochemistry: Inferring the Laws of Life at a Global Scale, Carnegie Institution Geophysical Laboratory, Jun 2019
117. The Physics of Living and Non-Living Worlds, Planetary Intelligence Symposium, Beyond Center, ASU, Tempe AZ, Oct. 2018
118. The Physics of Living and Non-Living Worlds, Consultation of Theological Inquiry, Center for Theological Inquiry, Princeton NJ, Dec. 2017
119. Reprogramming Reality, Beyond Center for Fundamental Concepts in Science, Arizona State University, Tempe AZ, Sept. 2017
120. Bio from Bit: Quantifying the Origins of Life, Waterloo Institute for Complexity and Innovation, University of Waterloo, Waterloo ON, Mar. 2017

121. The Origins of Life Nov. 2015 Origins Seminar, University of Arizona, Tuscon, AZ, Nov. 2015
122. The Origin and Nature of Life, Inquiry on Astrobiology (NASA sponsored), Center for Theological Inquiry, Princeton NJ, Sept. 2015
123. Towards a Physics of Life: From Origins to Free Will?, Beyond Center for Fundamental Concepts in Science, Arizona State University, Tempe AZ, May 2015
124. The Emergence of Life as a First Order Phase Transition, School of Earth and Space Exploration Colloquium, Arizona State University, Feb. 2015
125. What is life ... And How Did it Emerge? HHMI Distinguished Lecturer Colloquium, Gettysburg College, Gettysburg PA, Feb. 2015
126. Information Hierarchies, Chemical Evolution and the Transition from Non-Life to Life, NASA Postdoctoral Program Alumni Inaugural Lecture, NASA Astrobiology Institute, Feb. 2014
127. The Rise of Information in the Origin of Life, Astrobiology Coffee Hour Seminar, Arizona State University, Tempe AZ, Feb. 2014
128. The Algorithmic Origins of Life, Physics Department Colloquium, Arizona State University, Tempe AZ, Apr. 2013
129. Quantum Non-barking Dogs, Cosmology Seminar, Arizona State University, Tempe AZ, Apr. 2013
130. Chemical Evolution from Geochemistry to Biology, Astrobiology Coffee Hour Seminar, Arizona State University, Tempe AZ Apr. 2013
131. The Algorithmic Origins of Life Santa Fe Institute, Santa Fe NM, Jan. 2013
132. The Algorithmic Origins of Life, The SETI Institute, Mountainview CA, Nov. 2013
133. The Algorithmic Origins of Life, Astrobiology Program Colloquium, University of Washington, Seattle WA, Oct. 2013
134. Is Life Fundamental?, Cosmology Seminar, Arizona State University, Tempe AZ, Mar. 2012
135. Not Understanding the Physics Behind Origins, NASA Astrobiology Institute Origin of Life Focus Group Inaugural Virtual Seminar, Mar. 2012
136. von Neumann Machines and the Origin and Distribution of Life in the Universe Blue Marble Space Institute of Science Podcast Seminar, Dec. 2011
137. Non-Darwinian Dynamics and the Emergence of Life, Astrobiology Coffee Hour Seminar, Arizona State University, Tempe AZ, Sept. 2011
138. The Origin of Life: From Phase Transitions to Astrobiology Cosmology Seminar, Arizona State University, Tempe AZ, May 2011
139. Evolvability and the Emergence of Population Structure in Prebiotic Chemistry Center for Chemical Evolution, Georgia Institute of Technology, Atlanta GA, Feb. 2011
140. Punctuated Chirality, Origins Institute & Astrobiology Program, McMaster University, Ontario Canada, Mar. 2010
141. Chirality and the Origin of Life, Carnegie Institution of Washington Geophysical Laboratory, Washington DC, Feb. 2010

142. Chirality and the Origin of Life: From Fundamental Physics to the Search for Life in the Universe, Department of Physics and Astronomy, Colgate University, Hamilton NY, Feb. 2010
143. Life, Physics, and the Origin of Everything, Department of Physics and Astronomy, Denison University, Granville OH, Dec. 2009

OTHER EVENTS

- **Science Foo Camp** (SciFoo), invite-only meeting for global leaders in science & technology, Google campus, Mountain View CA, 2014, 2015, 2019
- **Mars 2022,** invite-only meeting hosted by Jeff Bezos & Amazon (postponed from 2020 due to COVID-19 to March 2022)
- **Ask a Physicist,** webinar series, presenter: Aug 2020, Oct 2020, Jan 2021, Mar 20201, Aug 2021, Oct 2021. Moderator: Nov 2020, Dec 2020, Sep 2021, Feb 2021, Jan 2022

PROFESSIONAL LEADERSHIP and SERVICE

NATIONAL AND INTERNATIONAL SERVICE

- Steering Committee, NASA NExSS Research Coordination Network, 2021 – present
- Steering Committee, Network for Life Detection Research Coordination Network, 2021-present
- International Society for Artificial Life Board, 2020 - 2021
- Organizer, Workshop on Information Transitions and Life, Santa Fe Institute, Santa Fe NM, Dec. 2019
- Steering Committee, Origins of Life Research Coordination Network National Science Foundation network based at the Santa Fe Institute, 2017 – present
- Program Committee, 9th International Conference on Complex Systems ICCS 2018, Boston MA
- Editor, "Re-Conceptualizing the Origin of Life" Volume of Philosophical Transactions of the Royal Society A, 2018
- Member, Science Organizing Committee (non-attending), Universal Biology Workshop, Earth-Life Science Institute, Tokyo Tech, Tokyo Japan, 2017
- Session Chair, "Laws of Life" and "Recent Progress in Origins of Life" (plenary) Astrobiology Science Conference 2017, Mesa AZ, Apr. 2017
- Member, Science Organizing Committee Astrobiology Science Conference, Tempe AZ, 2017
- Member, Science Organizing Committee (non-attending), NASA NExSS Exoplanet Biosignatures Workshop without Walls, Seattle WA, Jul. 2016
- Member, Program Committee, Artificial Life 2016, Cancun Mexico, 2016

- Chair, Science Organizing Committee, Re-Conceptualizing the Origin of Life, Carnegie Institution for Science, Washington DC, 2015
- Member, Local Organizing Committee, 2015 Conference on Complex Systems, Tempe AZ, 2015
- Chair, Origins of Life: A Problem for Complexity Science, 2015 Conference on Complex Systems Satellite Session, Tempe AZ, 2015
- Member, Local Organizing Committee, 2015 American Physical Society Four Corners Meeting, Tempe AZ, 2015
- Session Chair, "Laws of Life", Astrobiology Science Conference, Chicago IL 2015
- Session Chair, "From Prebiotic Chemistry to Functional Biopolymers" Astrobiology Science Conference, Chicago IL 2015
- Board of Directors, Blue Marble Space (education and research non-profit), Seattle WA USA, 2014- 2019
- Co-Founder and Inaugural Director, SAGANet.org (astrobiology-themed education website), 2011-2015
- Editor, "Information Hierarchies and Evolutionary Dynamics", Aspen Center for Physics Workshop Proceedings, Annals of the New York Academy of Sciences, 2013
- Co-organizer and Co-author Apr. 2012 NASA/NSF Alternative Chemistries for Life Workshop and Report, 2012
- Organizer, Astrobiology Coffee Hour Seminar Series "Follow the Elements" NASA Astrobiology Institute Center, Arizona State University, Tempe AZ, Spring 2012
- Chair, Gordon Research Seminar, Origin of Life Gordon Research Seminar, Galveston TX, Jan. 2012
- Organizer, Astrobiology Research Focus Group Workshop, Astrobiology Research Focus Group Workshop for Early–Career Astrobiologists, Ennis MT, June 2011
- Co–Organizer, Astrobiology Research Focus Group Workshop, Astrobiology Research Focus Group Workshop for Early–Career Astrobiologists, Crockett TX, Apr. 2010
- Discussion Leader, Prebiotic Chemistry and the Environments of Early Life, Origin of Life Gordon Research Seminar, Galveston TX, Jan. 2010

BOARDS

- Advisory Board, Sloan Foundation Matter to Life Initiative, 2022- present
- Advisory Board, Large Interferometer for Exoplanets (LIFE) Mission, 2021 - present
- Board of Directors, Blue Marble Space (501(c)(3) research and education non-profit) 2013-2019

EDITOR

- Associate Editor, Theory in Biosciences 2020-present
- Associate Editor, Frontiers in Computational Intelligence 2018 - 2020

- Associate Editor, Journal of Molecular Evolution 2013-2018

DEPARTMENTAL SERVICE

- Colloquium Committee, School of Earth and Space Exploration 2019 – 2022 (sabbatical spring 2022)
- BIPOC Recruitment Task Force, School of Earth and Space Exploration (2020-2021)
- Department Chair Search Committee, School of Complex Adaptive Systems, 2021
- Graduate Admissions Committee, School of Earth and Space Exploration 2015 - 2018, Chair (2017-2018)
- SESE Development Program Committee – Workshops for Success, School of Earth and Space Exploration (2016)
- Faculty Advisor, Women in Planetary Science at ASU, School of Earth and Space Exploration (2015)
- SESE Exploration Fellowship Committee, School of Earth and Space Exploration (2014)
- Chair, Registration and Guest Services Subcommittee Earth and Space Exploration Day Committee, School of Earth and Space Exploration (Fall 2014)
- Camp SESE volunteer, School of Earth and Space Exploration (2014, 2015, 2016)
- Sundial volunteer, Department of Physics and School of Earth and Space Exploration (2014)

INSTITUTIONAL SERVICE

- **Deputy Director, Beyond Center for Fundamental Concepts in Science, Arizona State University**
  appointed 2018
- **Associate Director, ASU-SFI Center for Biosocial Complex Systems, Arizona State University and Santa Fe Institute**
  appointed 2019

BEYOND CENTER AND ASU-SFI CENTER WORKSHOPS (PRIMARY CONVENER)

- Infinite Turtles or Ground Truth?, May 2022 (virtual)
- Uncovering the Laws of Life, October 2021 (held in Grindavik, Iceland)
- Beyond Laws, May 2021 (virtual)
- Emergent Spacetime, Nov 2020 (online)
- Beyond COVID-19: Exit Strategies, May 2020 (virtual)
- The Origin of Meaning, Mar. 2019

- Theory in Origins of Life, Nov. 2018
- Quantum Criticality and the Secret Electric Life of Cells, Nov. 2018
- Tracing the Deep Evolutionary Roots of Cancer, Apr. 2018
- Information and Non-Equilibrium Thermodynamics, Apr. 2017
- Quantifying Biological Complexity: Can it be done? Feb. 2017
- The Power of Information, Mar. 2016
- Nature as Computation, May 2015
- Information, Causality and the Origin of Life Workshop, Sept. 2014
- Information, Complexity and Life Workshop, Feb .2014
- Complex Systems Theory, Cancer Biology and Information, Feb. 2014
- Engines of Life: Thermodynamic Pathways to Metabolism Workshop, Nov. 2012
- Oxidative Stress and the Deep Evolutionary Roots of Cancer Workshop, Nov. 2012
- Evolution, Development and Cancer: Connecting the Dots Workshop, Feb. 2012
- The Origin and Nature of Biological Information Workshop, May 2012

REVIEWER

JOURNALS: ACTA ASTRONAUTICA, ARTIFICIAL LIFE, ASTROBIOLOGY, ENTROPY, FEBS LETTERS, JOURNAL OF MOLECULAR EVOLUTION, JOURNAL OF THE ROYAL SOCIETY INTERFACE, JOURNAL OF SYSTEMS CHEMISTRY, NATURE REVIEWS PHYSICS, NATURE ASTRONOMY, NATURE, ORIGINS OF LIFE AND EVOLUTION OF BIOSPHERES, PHILOSOPHICAL TRANSACTIONS ROYAL SOCIETY A, PHILOSOPHY AND THEORY IN BIOLOGY, PROCEEDINGS NATIONAL ACADEMY SCIENCES USA, SCIENTIFIC REPORTS, SCIENCE ADVANCES,

FUNDING AGENCIES: NATIONAL AERONAUTICS AND SPACE ADMINISTRATION; NATIONAL SCIENCE FOUNDATION; JOHN TEMPLETON FOUNDATION; TEMPLETON WORLD CHARITY FOUNDATION, CANADIAN INSTITUTE FOR ADVANCED RESEARCH (CIFAR)

MEDIA and PUBLIC ENAGEMENT

PUBLIC ENGAGEMENT, LECTURES, APPEARANCES AND RECORDED MEDIA

1. Upcoming high-profile (defined as thousands to millions of regular listeners) podcast interview releases - Recorded: Lex Fridman Podcast (appearing w/ Leroy Cronin), Pretty Intense with Danica Patrick. Scheduled: The School of Greatness with Lewis Howes.
2. From Origins to Aliens: Understanding Where we Came From, and Finding Others Like Us in the Universe, Science & Cocktails, Copenhagen June 2022 (**estimated 1k** will be in attendance for this live public lecture)

3. What Alien Life Can Teach Us About Humanity | Dr. Sara Walker, April 2022 (**1.2k+ views** on YouTube in first week available)
4. Recognizing the Alien in Us, Santa Fe Community Lecture, March 2022 **(112k+ views** on YouTube in the first four weeks since delivering the lecture)
5. Into the Impossible Podcast with Professor Brian Keating, March 2022 (**17k+ views** on YouTube)
6. Featured in "Breaking the Mould: Pioneering Women in Science: Jocelyn Bell Burnell, Sabine Hossenfelder and more", Institute for Art and Ideas (UK) celebration of International Women in Science Day, Feb 2022 **(1.9k+ views** on YouTube**)**
7. Best of Live Audio, Twitter Spaces, Feb 2022 (live audio, **1.9K listened live**)
8. Earth at the Crossroads, Georgetown/SETI Public Panel, Nov 2021 (virtual)
9. Tom Swarbick Show, London Broadcasting Company (LBC), Nov 2021 (radio interview, LBC is London's largest radio broadcasting company reaching an estimated 2 million listeners each week)
10. "Sara Walker: The Origin of Life on Earth and Alien Worlds", Lex Fridman Podcast Interview, July 2021 (**659k+ views on YouTube**)
11. City Science Bienniale Panel on Alien Life, Barcelona, Spain May 2021 (participated virtually)
12. Academy Lectures on the Laws of Life, How the Light Gets In Festival (a pre-eminent arts and ideas festival in the UK), May 2021 (virtual)
    - Institute for Arts and Ideas Video Release "Understanding the Origins of Life | Sara Walker" (**2.7k+ views** on YouTube)
13. Origins of Life Discussion, Wolfson College, University of Oxford, March 2021 (virtual)
14. The Chicken or the Egg? Panel discussion with Daniel Dennett and Nick Lane, How the Light Gets In Festival (a pre-eminent arts and ideas festival in the UK), February 2021 (virtual)
    - Institute for Arts and Ideas Video Release "How did life evolve? | Daniel Denett, Nick Lane, Sara Walker "(**3.3k+ views** on YouTube)
15. Life is What? Solo talk, How the Light Gets In Festival (a pre-eminent arts and ideas festival in the UK), February 2021 (virtual)
    - Institute for Arts and Ideas Video Release "Life is What? | Sara Walker" (**4k+ views** on YouTube)
16. Life is What? Late Night Conferences on the Origin of Life, Radboud University, February 2021 (live virtual lecture with 100s in live attendance)
    - Video Release "Astrobiology with Sara Imari Walker | Late Night Conference with Wilhelm Huck" (**1.5k+ views** on YouTube)
17. What is Life? Conference on Religion, Ethics, & Science February 2021 (virtual)
18. What Alien Life Could Teach Us About Humanity, Freethink Media, released Dec 2020, (**348K+ views** on YouTube)
19. Finding Aliens: Is there a 'theory of everything' for life? | Sara Walker | Big Think, Big Think, released Dec. 2020 (**105K+ views on YouTube**)

https://bigthink.com/life/alien-life/

20. What is Life: The Secret to Understand Ourselves, John Templeton Foundation, released Dec. 2020 (**102k+** views on YouTube)
21. "Artificial Intelligence and the Search for Life in the Universe", Panel Discussion Hosted by the Library of Congress, released Dec. 2020 (**4.9K+ views** on YouTube)
22. "Andromeda Strain and the Meaning of Life: Part 4 with Kate Adamala and Sara Walker", Santa Fe Institute, released Nov 2020 (**1.5K+ views** on YouTube)
23. "Andromeda Strain and the Meaning of Life: Part 4 with Sara Walker and Lee Cronin", Santa Fe Institute, released Nov 2020 (**1.9K+ views** on YouTube)
24. Dr. Drew Podcast Episode 443: Sara Walker, released August 2020
25. The Information Theory of Biology and Origins of Life| Sara Imari Walker (Big Biology Crossover Episode) Complexity Podcast, 2020 (**1.7k views** on YouTube)
26. Mindscape Podcast Interview with Sean Carroll, 2020 (**26K+ views** on YouTube)
27. BioBiology Podcast Interview, 2018
28. Featured in Reanimation! Science Stories about Frankenstein released 2018
    - Episode 2: Organization from Chaos (**7.5k+** views on Vimeo)
    - Episode 7: Playing God (**5.2k+** views on Vimeo)
29. Matter Like Us: Searching for Complexity in our Universe, Art-Science Museum, Singapore, Oct. 2019
30. Physics of Death, Spirit of the Senses Salon, Tempe AZ, Sept. 2019
31. Searching for the Laws of Life, Origins of Life, Artificial Life, and Astrobiology (OoLaLa) Public Lecture Series, U. Wisconsin, Madison WI March 2019
32. Information, Aliens and the Origin of Life, Big Biology Podcast, Sept. 2018
33. Speaker and Organizer, Planetary Intelligence Symposium Beyond Center, Arizona State University, Tempe, AZ USA, Oct. 2018
34. Panelist "Who is out there: Why alien life might be weirder than it seems" World Science Festival 2018, New York City (**hundreds in live audience**), Jun 2018
    - "Who is Out There: Why Alien 'Life' May be Weirder than we Imagine", released by World Science Festival Feb. 2019 (**1.25M+ views** on YouTube)
35. Lecturer, Master Class World Science University 2018, New York City, Jun. 2018
    - Course now available online on the World Science Scholars website
36. Guest on Ask and Astrobiologist, Monthly online show sponsored by the NASA Astrobiology Institute and featuring prominent astrobiologists. Mar. 2018 (**1.6k+ views** on YouTube)
37. Keynote, Undergraduate Women in Physics Conference Arizona State University, Tempe AZ, Jan. 2018
38. ***What is Life?*** Discussion with prominent science writer Carl Zimmer Caveat, New York City, Sept. 2017
    - Released as part of a podcast series of interviews
39. Panelist Life Beyond Earth: Where Will We Discover Alien Life? Astrobiology Science Conference, Mesa AZ, Mar. 2017

40. "A Unified Theory of Life: Math, Art . . . Information" TEDxASU, Tempe AZ, Mar. 2017 (**6.4k+ views** on YouTube)
41. Career Panel, Sundial Mentoring Class, Arizona State University, Tempe AZ, Mar. 2017
42. Keynote Speaker, "Alien Life: The Same as Us or Different?" Sundial Science Conference, Arizona State University, Tempe AZ, Apr. 2016
43. Panelist, Total Recall Double Feature, Scottsdale Museum of Contemporary Art, Dec. 2015
44. "Astrobiology and the Search for Life", New Discoveries Lecture Series, ASU School of Earth and Space Exploration, Tempe AZ, Nov. 2015
45. Featured on episode of ***Through the Wormhole with Morgan Freeman*** titled "Are We Here for a Reason?", Discovery Science Channel, Spring 2015
46. "The Search for ETI in the 21st Century: Beyond Radio Astronomy?", Valley Engineering Science & Technology Club, Phoenix AZ, May 2015
47. SciFri Book Club Discussion Leader, Science Friday National Public Radio (**on air 2x, average listenership ~ 1.3 million**) July & Aug. 2014
48. "Astrobiology and the Search for ETI" Phoenix Public Library, Phoenix AZ, July 2014
49. "The Search for ETI in the 21st Century: Beyond Radio Astronomy?" West Valley Astronomy Club, Phoenix AZ, Mar. 2014
50. Panelist, Phoenix Comicon, Phoenix AZ, May 2014
51. Panelist, "Serenity, Softwire and the Science of Science Fiction", ASU, May 2014
52. Keynote Speaker, "Sci-Fi Driving Sci-Fact" SpaceVision, Tempe AZ, Nov. 2013
53. "The Emergence of Life: Here and Elsewhere" Earth and Space Exploration Day, School of Earth and Space Exploration, Arizona State University, Tempe AZ Nov. 2013
54. Program Coordinator & Science Mentor, SAGANet.org Mentorship Program, 2013 – 2015
55. "What is Life?" Spirit of the Senses Salon, Phoenix AZ, Aug. 2013
56. Judge, Intel International Science and Engineering Fair, Phoenix AZ, May 2013
57. Panelist, Phoenix Comicon, Phoenix AZ, May 2013
58. "The Search for ETI in the 21st Century: Beyond Radio Astronomy?" East Valley Astronomy Club, Mesa AZ, Feb. 2013
59. "Astrobiology: Life in the Universe" Science Circle of Arizona, Tempe AZ, Feb. 2013
60. Panelist, "Wilder Ideas – One-Way Missions, Warp Drives, Starships . . . " Beyond Center Symposium "The Future of Humans in Space", Oct. 2012
61. "The Origins of Life" Spirit of the Senses Salon, Phoenix AZ, Oct. 2012
62. "The Origins of Life" East Valley Astronomy Club, Mesa AZ, Oct. 2012
63. Mentor, Astrobiology Science Conference, Apr. 2012
64. Competitor, FameLab Astrobiology Science Outreach Competition Judge, Jan. 2012
65. What If? Prize Educator's Competition, Jan. 2012
66. Guest Scientist, I'm a Scientist: Get Me Out of Here!, Jun. 2011

67. Exhibitor for the NASA/NSF Center for Chemical Evolution, AAAS Annual Meeting, Feb. 2011
68. Women in Science Mentoring, Hanover NH, 2009-2010
69. Co-founder & Organizer Dartmouth College Science Cafes, 2008-2010
70. Founding Member, Dartmouth Graduate Women in Science & Engineering, 2008-2010
71. Howard Hughes Medical Institute/ Montshire Museum Mentor, 2009
72. Facilitator, Non-Traditional Careers by Gender Workshop, Cape Cod Community College 2008

SELECTED PRESS COVERAGE AND MEDIA INTERVIEWS

1. Un nuevo estudio explora cómo serían las características de la vida extraterrestre, Publimetro, April 2022
2. Astrobiólogos predicen la química de la vida 'como no la conocemos', 20minutos, Mar. 2022
3. La química de la vida como no la conocemos, Ambientum, Mar 2022
4. Vida alienigena pode ser bioquimicamente diferente da vida como a conhecemos, Othar Digital, Mar. 2022
5. Riformulando le "leggi della vita", Coelum, Mar. 2022
6. Život tak, ako ho nepoznáme: Dokážeme nájsť vo vesmíre niečo, o čom nemáme najmenšiu predstavu?, Vosveteit, Mar. 2022
7. Astrobiologica: All ricercar della vita che non, Alive Universe, Mar. 2022
8. Cómo buscar la vida 'como no la conocemos', ABC Ciencia, Mar. 2022
9. 'Uzaylıları' Bulmamızı Kolaylaştıracak: Evrensel 'Yaşam Formu' Tanımımızı Genişleten Yeni Bir Araştırma Gerçekleştirildi, Webtekno, Mar. 2022
10. Where's my Jet Pack? It was at MARS conference with along with Jeff Bezos and Amazon CEO Andy Jassy, Geekwire, Mar. 2022
11. New Astrobiology Research Predicts Life as We Don't Know it, ASU News, Mar 2022
12. How to Search for Life as We Don't Know it, Universe Today, Mar. 2022
13. Search for Life as We Don't Know it, EarthSky, Mar. 2022
14. Scaling Laws in Enzymes May Help Predict Strange Life "As We Don't Know it", SFI news (SciTechDaily, AAAS EurekaAlert!), Mar. 2022
15. Find the freedom in free will, Psychology Today, Feb. 2022
16. Can a planet have a mind of its own? Thought experiment, Science Daily, Feb. 2022
17. Does a planet have a mind of its own? SciTechDaily, Feb. 2022
18. Can a planet have a mind of its own? Astrobiology News, Feb. 2022
19. Should we be looking for intelligence at a planetary scale? Space.com, Feb. 2022
20. A different way of looking at Earth's intelligence could benefit the whole planet, The Oklahoman, Feb. 2022
21. Can a planet have a mind of its own? Eurasia Review, Feb. 2022
22. Researchers claim that the Earth could be an intelligent being; read to know more, Mashable India, Feb. 2022

23. Do planets have a mind of their own? Researchers explore 'planetary intelligence' in a thought experiment, ABP Live, Feb. 2022
24. Does the entire planet have a mind of its own? Universe Today, Feb. 2022
25. L'intelligenza planetaria che salvera la terra, Media INAF, Feb. 2022
26. Um planeta pode ter uma mente propria? Planeta, Feb. 2022
27. Planet earth could be an intelligent being, researchers suggest, Unilad, Feb. 2022
28. What will Extraterrestrial Life Look Like? Cosmos, Jan 2022
29. Life is Complicated – Literally, Scientific American, Nov 2021
30. ASU Astrobiologist and Physicists Receives Early Career Award from the International Society for the Study of the Origin of Life, ASU Now, Nov 2021 (picked up by SpaceRef)
31. Using an Automated Chemistry Lab to Find the Origin of Life, Discover, Oct. 2021
32. New Technique to Search for Life, Whether or Not its Similar to Earth Life, Universe Today, June 2021
33. Scientists Develop New Molecular Tool to Detect Alien Life, ASU Now, May 2021
34. Counterintuitive – "Life Originated Independently Multiple Times on Earth as a New Form", The Daily Galaxy, August 2021
35. Astrophysics Graduate Looks Forward to Making a Positive Impact on those Around Him, ASU News, April 2021
36. What is life? Why cells and atoms haven't answered the question, Big Think, Mar. 2021
37. NASA Selects ASU Science Teams for Astrobiology Research, ASU Now Nov. 2020
38. NASA Selects New Science Teams for Astrobiology Research, NASA, Nov. 2020
39. Origin Story, Aeon Magazine, September 2020
40. Are Aliens Hiding in Plain Sight, The Guardian, September 2020
41. Does new physics lurk inside living matter, Physics Today, Aug. 2020
42. Detectability of Life Using Oxygen on Pelagic Planets and Water Worlds, Astrobiology Web, April 2020
43. New detectability index aids search for extraterrestrial life on exoplanets, Science Daily, May 2020
44. Exoplanets: How We'll Search for Signs of Life, Science Daily, May 2020 (also on PhysOrg)
45. ASU astrobiologist and physicist wins NIH challenge prize for Innovation, ASU Now, Nov. 2019
46. E.T. Hunt Shouldn't be Limited to Earth-like Life Scientists Say, Space.com, Aug. 2019
47. Harsh Radiation No Barrier to Life, Cosmos Magazine, April 2019
48. The organization of life on a planetary scale, Astrobiology News, Feb. 2019
49. ASU scientists study organization of life on a planetary scale, ASU Now, Jan. 2019
50. Living organisms find a critical balance, ASU Now, Oct. 2018
51. Living organisms find a critical balance, Science Daily, Oct. 2018
52. Here's what the search for life needs next, scientist say, Space.com, Oct. 2018
53. Constructing a theory of life, Foundational Questions in Science Institute. Jul. 2018

54. How Theoretical Physicists can Help Find Aliens, Space.com, Jul. 2018
55. How theoretical physicists can help find aliens, Scientific American, Jun. 2018
56. Are we Alone? ASU Scientists Developing Strategies to Search for Life on Exoplanets, ASU Now, June 2018
57. Reading the Signs of Life, Air & Space Smithsonian, June 2018
58. Scientists develop new strategies to discover life beyond earth, PhysOrg, June 2018
59. NASA Leads New Search for Alien Life with Scientists Developing Guidebook for Finding Biosignatures, TechTimes, June 2018
60. Local High School Students Named World Science Scholars, Mint Hill Times, Nov. 2018
61. First Support for a Physics Theory of Life, Quanta, Aug. 2017
62. Was the Origin of Life a Fluke? Or Was It Physics?, LiveScience, Aug. 2017
63. A Theory of Reality as More than the Sum of its Parts, Quanta, Aug. 2017
64. Aliens are probably out there, according to Winston Churchill, Popular Science, Feb. 2017
65. Was it Inevitable that Humans would Develop Math? Sciworthy, Jul. 2017
66. Aliens may be woven into the fabric of nature and even ourselves, BigThink, Dec. 2016
67. The four biggest milestones in the history of life on Earth, Washington Post, Sept. 2016
68. 3.7-billion-year-old fossils may be the oldest signs of life on Earth, Washington Post, Sept. 2016
69. Cosmologists propose theory that building blocks of life may not be chemicals but information, Sydney Herald, Jul. 2016
70. Why Physics Is Not a Discipline, Nautilus, Apr. 2016
71. Seeking New Insights into Life's Origins, NASA feature story, Jan. 2016
72. Is "Almost Alive" A Real Thing?, Interview with Kevin Conklin, ASU Connections, Sept. 2015
73. Identifying the Mechanisms Driving Abiogensis in Chemical Systems that May Have Preceeded Life, Spring 2015
74. A2C2 Spring Quarterly, ASU, Spring 2015
75. Guest, HuffPost Live, Feb. 2015
76. Defining Life's Digital Software, Interview with Bruce Dorminey on Forbes.com, Aug. 2014
77. Meet the 'Dune' Readers: Kim Stanley Robinson and Sara Imari Walker, NPR's Science Friday, Summer 2014
78. Dune Discussion Question: Week #2 , NPR's Science Friday, Summer 2014
79. Hollywood Star visits ASU to Promote Teen Reading, Science Exploration, June 2014
80. If the world is a computer, life is an algorithm, Science News Blog, June 2014
81. Life began when algorithms took control, Science News Blog, June 2014
82. From Soup to Cells: Measuring the Emergence of Life, Astrobiology Magazine, Mar. 2014
83. The conceptual framework for measuring the emergence of life, PhysOrg, Mar. 2014

84. NASA Astrobiology NPP Alumni Series: Sara Walker, NASA Astrobiology Institute, Feb. 2014
85. The connection between cancer biology and astrobiology, Interview with Pauline Davies, Apr. 2013
86. A View From the Top, Foundational Questions in Science Institute, Apr. 2013
87. The RNA world's last hurrah?, Interview with Suzan Mazur, Jan. 2013
88. Life Redefined, Interview on Huffpost Live, Jan. 2013
89. The Secret of Life Won't be Cooked Up in a Chemistry Lab, The Guardian, Jan. 2013
90. New way to look at dawn of life: Focus shifts from 'hardware' to 'software' Science Daily, Jan. 2013
91. Mysterious origin of life needs a rethink, scientists argue, NBC News, Jan. 2013
92. A New Way to Look at the Dawn of Life, NASA Astrobiology Institute, Jan. 2013
93. Origin of Life: New Study Spotlights Not Chemistry But How Living Things Store, Process Infor- mation, OpEdNews.com, Jan. 2013
94. The Origins of Life" –Radical New Theory Says Origin is Algorithmic vs Chemical, Daily Galaxy, Jan. 2013
95. Scientists Offer New Way To Look At The Origins Of Life, RedOrbit, Jan. 2013
96. An information-processing approach to the origin of life, Kurzweil News, Jan. 2013
97. Rethink creation of life in terms of information, argues new theory, Sci GoGo, Jan. 2013
98. ASU researchers propose new way to look at the dawn of life, ASU News, Jan. 2013
99. Origin of life needs a rethink, scientists argue, CBS News, Jan. 2013
100. A New Way to Look at the Dawn of Life, Astrobiology Magazine, Jan. 2013
101. Little Atoms Roadtrip, Interview with Neil Denny, June 2012
102. There's No Place Like Home, Nature News & Views, Feb. 2008

MEMBERSHIPS

- Foundational Questions Institute (FQXI) (invite only)
- International Society for Artificial Life
- Complex Systems Society
- Blue Marble Space Institute of Science