

A more up-to-date list of references pertaining to the field of artificial life. It could be a resource for projects in that field.

## References

- [1] Edwin A. Abbott. *Flatland: A Romance of Many Dimensions*. Dover Publications, Inc., New York, NY, 1884. 6th Edition, Revised with Introduction by Banesh Hoffmann, 1952.
- [2] Adam Adamatsky. *Identification of Cellular Automata*. 1994. pages 1-56.
- [3] Annel F. Agrawal. Sexual selection and the maintenance of sexual reproduction. *Nature*, 411:692–695, 7 June 2001.
- [4] Michael A. Arbib. Simple self-reproducing universal automata. *Information and Control*, 9:177–189, 1966.
- [5] Michael A. Arbib, editor. *The Handbook of Brain Theory and Neural Networks*. The MIT Press, Cambridge, Massachusetts, 1995.
- [6] J. C. Astor and C. Adami. A developmental model for the evolution of artificial neural networks. *Artificial Life*, 6:189–218, 2000.
- [7] John F. Atkins and Ray Gesteland. The 22nd amino acid. *Science*, 296:1409–1410, May 24 2002.
- [8] Philip Ball. It falls into place. *Nature*, 413:667–668, October 18 2001.
- [9] Mark A. Bedau, John S. McCaskill, Norman H. Packard, Steen Rasmussen, Chris Adami, David G. Green, Takashi Ikegami, Kunihiko Kaneko, and Thomas S. Ray. Open problems in artificial life. *Artificial Life*, 6:363–376, 2000.
- [10] Steven A. Benner, Petra Burgstaller, Thomas R. Battersby, and Simona Jurczyk. Did the rna world exploit an expanded genetic alphabet? In Raymond F. Gesteland, Thomas R. Cech, and John F. Atkins, editors, *The RNA World*, pages 163–181. Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York, second edition, 1999.
- [11] Elwyn R. Berlekamp, John H. Conway, and Richard K. Guy. *Winning Ways for your mathematical plays*, volume Volume 2: Games in Particular, chapter 25. Academic Press, London, 1982.
- [12] Thomas Bever and Mario Montalbetti. Noam’s ark. *Science*, 298:1565–1566, November 22 2002. This article should be read as a preface to “The faculty of Language: What is it, Who has it, and how did it evolve?”.

- [13] Elie Bienenstock and Stuart Geman. Compositionality in neural systems. In Michael A. Arbib, editor, *The Handbook of Brain Theory and Neural Networks*, pages 159–162. The MIT Press, Cambridge, Massachusetts, 1995.
- [14] Henry R. Bourne and Orion Weiner. A chemical compass. *Nature*, 419:21, September 2002.
- [15] Rodney A. Brooks. The relationship between matter and life. *Nature*, 409:409–411, 18 January 2001.
- [16] Joachim M. Buhmann. Oscillatory associative memories. In Michael A. Arbib, editor, *The Handbook of Brain Theory and Neural Networks*, pages 159–162. The MIT Press, Cambridge, Massachusetts, 1995.
- [17] Etienne Burdet, Rieko Osu, David W. Franklin, Theodore E. Milner, and Mitsuo Kawato. The central nervous system stabilizes unstable dynamics by learning optimal impedance. *Nature*, 414:446–449, November 22 2001.
- [18] Denis Burnham, Christine Kitamura, and Ute Vollmer-Conna. What’s new, pussycat? on talking to babies and animals. *Science*, 296:1435, May 24 2002.
- [19] Marina Chicurel. Windows on the brain. *Nature*, 412:266–268, July 2001.
- [20] Hui-Hsien Chou and James A. Reggia. Emergence of self-replicating structures in a cellular automata space. *Physica*, 110:252–276, 1997.
- [21] Murry R. Clark, Gary T. Anderson, and Robert D. Skinner. Coupled oscillator control of autonomous mobile robots. *Autonomous Robots*, 9:189–198, 2000.
- [22] E. F. Codd. *Cellular automata*. ACM Monograph Series. Academic Press, New York, 1968.
- [23] Jack Cohen. Knife-edge of design. *Nature*, 411:529, May 2001.
- [24] Jonathan H. Connell. *Minimalist Mobil Robotics: A Colony-style Architecture for an Artificial Creature*, volume 5 of *Perspectives in Artificial Intelligence*. Academic Press, Inc., Boston, Massachusetts, 1990.
- [25] Barry W. Connors. Single-neuron mnemonics. *Nature*, 420:133–134, November 14 2002. This article should be read as as preface to “Graded Persistent Activity in Entorhinal Cortex Neurons”.
- [26] Lynnae Davies, Larry Keenan, and Harold Koopowitz. Nerve repair and behavioral recovery following brain transplantation in *notoplana acticola*, a polyclad flatworm. *The Journal of Experimental Zoology*, 235:157–173, 1985.

- [27] Peter Dittrich, Jens Ziegler, and Wolfgang Banzhaf. Artificial chemistries—a review. *Artificial Life*, 7:225–275, 2001.
- [28] Keith L. Dowling. The simulated emergence of distributed environmental control in evolving microcosms. *Artificial Life*, 8(2):123–153, 2002.
- [29] Robert C. Eaton, Jean C. Hofve, and Joseph R. Fetcho. Beating the competition: The reliability hypothesis for mauthner axon size. *Brain Behavior and Evolution*, 45(4):183–194, 1995.
- [30] Linglan Edwards and Yun Peng. Computational models for the formation of protocell structures. *Artificial Life*, 4:61–77, 1998.
- [31] Alexi V. Egorov, Bassam N. Hamam, Erik Fransen, Michael E. Hasselmo, and Angel A. Alons. Graded persistent activity in entorhinal cortex neurons. *Nature*, 420:173–178, November 14 2002. This article should be prefaced with article “Single-Neuron Mnemonics”.
- [32] Harald E. Esch, Shaowu Zhang, and Mandyan V. Srinivasan. Honeybee dances communicate distances measured by optic flow. *Nature*, 411:581–583, May 31 2001.
- [33] Scott E. Fahlman and Christian Lebiere. The cascade-correlation learning architecture. *Advances in Neural Information Processing Systems*, 2:524–532, 1990.
- [34] R. Douglas Fields and Beth Stevens-Graham. New insights into neuron-glia communication. *Science*, 298:556–561, October 18 2002.
- [35] Dario Floreano and Claudio Mattiussi. Evolution of spiking neural controllers for autonomous vision-based robots. *Evolutionary Robotics*, pages 38–61, 2001. LNCS 2217.
- [36] Foresight Institute. *Architectural Considerations for Self-replicating Manufacturing Systems*, Palo Alto, California, November 1998.
- [37] Stephanie Forrest, editor. *Emergent Computation*. MIT Press, Cambridge, Massachusetts, 1991.
- [38] Edward Fredkin. Digital mechanics. *Physica*, 45:254–270, 1990. North-Holland Elsevier Science Publishers B.V.
- [39] Stephen J. Freeland and Laurence D. Hurst. The genetic code is one in a million. *Journal of Molecular Evolution*, 47:238–248, 1998.
- [40] Robert A. Freitas, Jr. and William P. Gilbreath, editors. *Advanced Automation for Space Missions*, number 2255 in NASA Conference Publication, University of Santa Clara, Santa Clara, California, 1982. The National Aeronautics and Space Administration and the American Society for Engineering Education, National Aeronautics and Space Administration Scientific and Technical Information

- Branch. <http://www.islandone.org/MMSG/aasm/>, Proceedings of the 1980 NASA/ASEE Summer Study.
- [41] Chikara Furusawa and Kuniyuki Kaneko. Complex organization in multicellularity as a necessity in evolution. *Artificial Life*, 6:265–281, 2000.
  - [42] Sandra Clara Gadanho and John Hallam. Robot learning driven by emotions. *Adaptive Behavior*, 2002.
  - [43] Phillip Gerrish-2002. Evolution plays dice. *Nature*, 420:756–757, December 19/26 2002.
  - [44] Raymond F. Gesteland, Thomas R. Cech, and John F. Atkins, editors. *The RNA World: The Nature of Modern RNA Suggests a Prebiotic RNA*. Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY, second edition edition, 1999.
  - [45] Carla P. Gomes and Bart Selman. Satisfied with physics. *Science*, 297:784–785, August 2 2002.
  - [46] T. Gomi, editor. *Evolution of Spiking Neural COntrollers for Autonomous Vision-Based Robots*. ER, Springer-Verlag, 2001. pages 38–61, LNCS 2217.
  - [47] Monica Grady. *Search for Life/Astrobiology*. Natural History Museum Smithsonian Press, 2001.
  - [48] Gutowitz. *Cellular Automata, Theory and Experiment*. MIT/North-Holland, 1991. Reprinted from a special issue of PHYSICA D.
  - [49] Bing Hao, Weimin Gong, Tsuneo K. Ferguson, Carey M. James, Joseph A. Krzycki, and Michael K. Chan. A new uag-encoded residue in the structure of a methanogen methyltransferase. *Science*, 296:1462–1466, May 24 2002.
  - [50] Inman Harvey. Artificial evolution: A continuing saga. *Evolutionary Robotics*, pages 94–109, 2001. LNCS 2217, t. Gomi Ed.
  - [51] Mark D. Hauser, Noam Chomsky, and W. Tecumseh Fitch. The faculty of language: What is it, who has it, and how did it evolve? *Science*, 298:1569–1579, November 22 2002. Please read the article “Noam’s Ark” pages 1565–1566 as a preface to this article.
  - [52] Laura Helmuth. Neuroscience - redrawing the brain’s map of the body. *Science*, 296:1587–1588, May 31 2002.
  - [53] Jan M. Hemmi and Jochen Zeil. Robust judgement of inter-object distance by an arthropod. *Nature*, 421:160–163, January 9 2003.
  - [54] Constance Holden. Random samples: Comic infringement. *Science*, 297:1643, September 6 2002.

- [55] Adrian Horridge. The nervous system of the ephyra larva of aurellia aurita. *Quarterly Journal of Microscopical Science*, 97:59–74, March 1956.
- [56] G. A. Horridge. The origins of the nervous system. In Geoffrey H. Bourne, editor, *The Structure and Function of Nervous Tissue*, volume 1, pages 1–31. Academic Press, New York, 1968.
- [57] Ron Hoy. Turning in by turning off. *Nature*, 418:831–832, August 22 2002.
- [58] IEEE. *Kinematics of Gel Robots made of Electro-Active Polymer PAMPS Gel*, April 2000. International Conference on Robotics and Automation.
- [59] Auke Jan Ijspeert, John Hallam, and David Willshaw. Evolving swimming controllers for a simulated lamprey with inspiration from neurobiology. *Adaptive Behavior*, 7(2):151–172, 1999.
- [60] Katsunobu Imai, Takahiro Hori, and Kenichi Morita. Self-reproduction in three-dimensional reversible cellular space. *Artificial Life*, 8(2):155–174, 2002.
- [61] Donald E. Ingber. The architecture of life. *Scientific American*, January 1998. <http://www.sciam.com/1998/0198issue/0198ingber.html>.
- [62] David Jefferson, Robert Collins, Claus Cooper, Michael Dyer, Margot Flowers, Richard Korf, Charles Talor, and Alan Wang. Evolution as a theme in artificial life: The genesys/tracker system. In Christopher G. Langton, Charles Taylor, J. Doyne Farmer, and Steen Rasmussen, editors, *Artificial Life II*, pages 549–578. Addison-Wesley, 1991.
- [63] Gerald F. Joyce. Booting up life. *Nature*, 420:278–279, November 21 2002. This article should be read as a preface to "In Silico Simulations Reveal that Replicators with Limited Dispersal Evolve Towards Higher Efficiency and Fidelity".
- [64] Gerald F. Joyce and Leslie E. Orgel. Prospects for understanding the origin of the rna world. In Raymond F. Gesteland, Thomas R. Cech, and John F. Atkins, editors, *The RNA World*, pages 49–77. Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York, second edition, 1999.
- [65] E. Karsenti and I. Vernos. The mitotic spindle: A self-made machine. *Science*, 294:543–547, October 19 2001.
- [66] Bass Kast. The best supporting actors. *Nature*, 412:674–676, 16 August 2001.
- [67] Stuart A. Kauffman. *Investigations*. Oxford University Press, 2000.
- [68] C. Larry Keenan, Richard Coss, and Harold Koopowitz. Cytoarchitecture of primitive brains: Golgi studies in flatworms. *Journal of Comparative Neurology*, 195:697–716, 1981.

- [69] John G. Kemeny. Man viewed as a machine. *Scientific American*, 192:58–67, April 1955.
- [70] Keith M. Kendrick, Ana P. da Costa, Andrea E. Leigh, Michael R. hinton, and John W. Peirce. Sheep don't forget a face. *Nature*, 414:165–166, November 8 2001.
- [71] Christof Koch and Francis Crick. The zombie within. *Nature*, 411:893, June 2001.
- [72] Evelyne Kohler, Christian Keysers, M. Alessandra Umilta, Leonardo Fogassi, Vittorio Gallese, and Giacomo Rizzolatti. Hearing sounds, understanding actions: Action representation in mirror neurons. *Science*, 297:846–848, August 2 2002.
- [73] Harold Koopowitz. Feeding behaviour and the role of the brain in the polyclad flatworm, planocera gilchrist. *Animal Behaviour*, 18:31–35, 1970.
- [74] Harold Koopowitz. Polyclad neurobiology and the evolution of central nervous systems. In Peter A.V. Anderson, editor, *Evolution of the First Nervous systems*, pages 315–327. Plenum Press, New York, 1989.
- [75] Harold Koopowitz, Mark Elvin, and Larry KeenanJ. In vivo visualization of living flatworm neurons using lucifer yellow intracellular injections. *Journal of Neuroscience Methods*, 69:83–89, October 1996.
- [76] Harold Koopowitz and Larry Keenan. The primitive brains of platyhelminthes. *Trends in Neurosciences*, 5(3):77–79, 1982.
- [77] H. D. Landahl, Warren S. McCulloch, and Walter Pitts. A statistical consequence of the logical calculus of nervous nets. *Bulletin of Mathematical Biophysics*, 5:135–137, 1943.
- [78] Chris G. Langton. Emergent computation. In Stephanie Forrest, editor, *Computation at the Edge of Chaos*, pages 12–37. MIT Press, Cambridge, Massachusetts, 1991.
- [79] Christopher G. Langton. Self-reproduction in cellular automata. *Physica D*, 10D(1 & 2):135–144, January 1984.
- [80] Jack M. Loomis. Looking down is looking up. *Nature*, 414:155–156, November 2001.
- [81] G. O. Mackie. The elementary nervous system revisited. *American Zoologist*, 30:907–920, 1990.
- [82] Norman Margolus. Physics-like models of computation. *PHYS D*, 10D:81–95, 1984.
- [83] Humberto R. Maturana and Francisco J. Varela. *The Tree of Knowledge: the Biological Roots of Human Understanding*. New Science Library, 1987.

- [84] Warren S. McCulloch. Why the mind is in the head. In L.A. Jeffress, editor, *Cerebral Mechanisms in Behavior-The Hixon Symposium*, pages 42–57. John Wiley & Sons, New York, NY, 1951.
- [85] Warren S. McCulloch and Walter Pitts. A logical calculus of the ideas immanent in nervous activity. *Bulletin of Mathematical Biophysics*, 5:115–133, 1943.
- [86] Harold V. McIntosh. Wolfram’s class iv automata and a good life. *Physica*, 45:105–121, 1990. Elsevier Science Publishers B.V. North Holland.
- [87] Barry McMullin. John von neumann and the evolutionary growth of complexity: Looking backward, looking forward... *Artificial Life*, 6:347–361, 2000.
- [88] Nicolas Meuleau and Marco Dorigo. Ant colony optimization and stochastic gradient descent. *Artificial Life*, 8(2):103–121, 2002.
- [89] M. Mezard, G. Parisi, and R. Zecchina. Analytic and algorithmic solution of random satisfiability problems. *Science*, 2002.
- [90] Edward F. Moore. Artificial living plants. *Scientific American*, 195:118–126, October 1956.
- [91] Harold J. Morowitz. A model of reproduction. *American Scientist*, 47:261–263, 1959.
- [92] Satoshi Murata, Eiichi Yoshida, Haruhisa Kurokawa, Nohji Tomita, and Shigeru Kokaji. Self-repairing mechanical systems. *Autonomous Robots*, 10:7–21, 2001.
- [93] John Myhill. The abstract theory of self-reproduction. In A.W. Burks, editor, *Essays on Cellular Automata*, pages 206–218. Univ. of Illinois Press, Urbana, Illinois, 1970.
- [94] J. I. Nelson. Binding in the visual system. In Michael A. Arbib, editor, *The Handbook of Brain Theory and Neural Networks*, pages 157–159. The MIT Press, Cambridge, Massachusetts, 1995.
- [95] M.A. Nielsen. Introduction to quantum information theory. *Center for Quantum Computer Technology and Department of Physics*, 1:1–7, November 15 2000.
- [96] Jason Noble and Peter M. Todd. Imitation or something simpler? modelling simple mechanisms for social information processing. *Imitation in Animals and Artifacts*, in press.
- [97] Stefano Nolfi. How learning and evolution interact: The case of a learning task which differs from the evolutionary task. *Adaptive Behavior*, 7(2):231–236, 1999.

- [98] Stefano Nolfi and Dario Floreano. Learning and evolution. *Autonomous Robots*, 7:89–113, 1999.
- [99] Teng Lend Ooi, Bing Wu, and Ziji Jiang J. He. Distance determined by the angular declination below the horizon. *Nature*, 414:197–200, November 2001.
- [100] A.N. Pargellis. Digital life behavior in the amoeba world. *Artificial Life*, 7:63–75, 2001.
- [101] Roland Pease. Brane new world. *Nature*, 411:986–988, June 2001.
- [102] L. S. Penrose. Self-reproducing machines. *Scientific American*, 200:105–114, June 1959.
- [103] Umberto Pesavento. An implementation of von neumann’s self-reproducing machine. *Artificial Life*, 2(4):337–354, 1995.
- [104] R.A. Poldrack, J. Clark, E.J. Pare-Blagoev, D. Shohamy, J. Creso Moyano, C. Myers, and M.A. Gluck. Interactive memory systems in the human brain. *Nature*, 414:546–550, November 29 2001.
- [105] Jordan B. Pollack, Hod Lipson, Gregory Hornby, and Pablo Funes. Three generations of automatically designed robots. *Artificial Life*, 7:215–223, 2001.
- [106] James F. A. Poulet and Berthold Hedwig. A corollary discharge maintains auditory sensitivity during sound production. *Nature*, 418:872–876, August 22 2002.
- [107] Steven R. Quartz and Terrence J. Sejnowski. The neural basis of cognitive development: A constructivist manifesto. *The Behavioral and Brain Sciences*, 20:537–596, 1997.
- [108] Thomas S. Ray. An approach to the synthesis of life. In Christopher G. Langton, Charles Taylor, J. Doyne Farmer, and Steen Rasmussen, editors, *Artificial Life II, Proceedings of the Workshop on Artificial Life held February, 1990 in Santa Fe, New Mexico*, volume X of *Santa Fe Institute Studies in the Sciences of Complexity*, pages 371–408, Redwood City, CA, 1992. Addison-Wesley.
- [109] Bernard D. Reger, Karen M. Fleming, Vittorio Sanguineti, Simon Alford, and Ferdinando A. Mussa-Ivaldi. Connecting brains to robots: An artificial body for studying the computational properties of neural tissues. *Artificial Life*, 6:307–324, 2000.
- [110] James A. Reggia, Steven L. Armentrout, Hui-Hsien Chou, and Yun Peng. Simple systems that exhibit self-directed replication. *Science*, 259:1282–1287, February 26 1993.



- [111] James A. Reggia, Hui-Hsien Chou, and Jason D. Lohn. Cellular automata models of self-replicating systems. *Advances in Computers*, 47:141–183, 1998.
- [112] James A. Reggia, Reiner Schultz, Gerald S. Wilkinson, and Juan Uriagereka. Conditions enabling the evolution of inter-agent signaling in an artificial world. *Artificial Life*, 7:3–32, 2001.
- [113] Rick L. Riolo, Michael D. Cohen, and Robert Axelrod. Evolution of cooperation without reciprocity. *Nature*, 414:441–443, November 22 2001. included in the hardcopy bib file is also an article called Tides of Tolerance by Karl Sigmund and Martin A. Nowak. This article, from the same issue as the Riolo article is realed in topic and can be found on pp 503 and 505.
- [114] Robert Rosen. *Life Itself: A Comprehensive Inquiry Into the Nature, Origin, and Fabrication of Life*. Columbia University Press, New York, 1991.
- [115] Daniela Rus and Masette Vona. Crystalline robots: Self-reconfiguration with compressible unit modules. *Autonomous Robots*, 10:107–124, 2001.
- [116] Michael Schwab and Mike Tyers. Archipelago of destruction. *Nature*, 413:268–269, September 20 2001.
- [117] Daniel Segré, Doron Lancet, Ora Kedem, and Yitzhak Pilpel. Graded autocatalysis replication domain (gard): Kinetic analysis of self-replication in mutually catalytic sets. *Origins of Life and Evolution of the Biosphere*, 28:501–514, 1998.
- [118] Robert F. Service. Can sensors make a home in the body? *Science*, 297:962–963, August 9 2002.
- [119] Munetaka Shidara and Barry J. Richmond. Anterior cingulate: Single neuronal signals related to degree of reward expectancy. *Science*, 296:1709–1711, May 31 2002.
- [120] Steven Siller. Sexual selection and the maintenance of sex. *Nature*, 411:689–692, 7 June 2001.
- [121] Wolf Singer. Synchronization of neuronal responses as a putative binding mechanism. In Michael A. Arbib, editor, *The Handbook of Brain Theory and Neural Networks*, pages 159–162. The MIT Press, Cambridge, Massachusetts, 1995.
- [122] Moshe Sipper and James Reggia. Go forth and replicate. *Scientific American*, 265(2):35–43, August 2001.

- [123] Moshe Sipper, Eduardo Sanchez, Daniel Mange, Marco Tomassini, Andres Perez-Uribe, and Andre Stauffer. A phylogenetic, ontogenetic, and epigenetic view of bio-inspired hardware systems. *IEEE Computer*, 1(1):83–97, April 1997.
- [124] Andrew N. Spencer, Jan Pryszsieznik, Juan Acosta-Urquidi, and Trent A. Basarsky. Presynaptic spike broadening reduces junctional potential amplitude. *Nature*, 340:636–638, 24 August 1989.
- [125] Andre Stauffer and Moshe Sipper. An interactive self-replicator implemented in hardware. *Artificial Life*, 8(2):175–183, 2002.
- [126] Dietrich Stauffer and Amnon Aharony. *Introduction to Percolation Theory*. Taylor and Francis, 2nd edition, 1992.
- [127] Scott A. Strobel. Repopulating the rna world. *Nature*, 411:1003–1006, June 2001.
- [128] Peter Szabo, Istvan Scheuring, Tamas Czaran, and Eors Szathmary. In silico simulations reveal that replicators with limited dispersal evolve towards higher efficiency and fidelity. *Nature*, 420:340–343, November 21 2002. This article should be prefaced with "Bootting Up Life".
- [129] Hiroaki Takagi, Kunihiko Kaneko, and Tetsuya Yomo. Evolution of genetic codes through isologous diversification of cellular states. *Artificial Life*, 6:283–305, 2000.
- [130] Tim taylor and Colm Massey. Recent developments in the evolution of morphologies and controllers for physically simulated creatures. *Artificial Life*, 7:77–87, 2001.
- [131] D'Arcy Wentworth Thompson. *On Growth and Form*. Cambridge University Press, London, England, 1917. This edition edited by John Tyler Bonner, published in 1969.
- [132] Tommaso Toffoli and Norman H. Margolus. Invertible cellular automata: A review. *Physica*, 45:229–253, 1990. Elsevier science Publishers B.V. North Holland.
- [133] Kohji Tomita, Satoshi Murata, Haruhisa Kurokawa, Eiichi Yoshida, and Shigeru Kokaji. Self-assembly and self-repair method for a distributed mechanical system. In *IEEE Transactions on Robotics and Automation*, volume 15, pages 1035–1045, dec 1999.
- [134] Stanislaw M. Ulam. On some mathematical problems connected with patterns of growth of figures. In *Essays in Cellular Automata*, chapter Essay 9, pages 219–231. University of Illinois Press, 1970. reprinted by permission of publisher, The American Mathematical Society, from the Proceedings of Symposia in Applied Mathematics 14: 215-224, copyright 1962.

- [135] Cem Ünsal, Han Kiliçgöte, and Pradeep K. Khosla. A modular self-reconfigurable bipartite robotic system: Implementation and motion planning. *Autonomous Robots*, 10:23–40, 2001.
- [136] Joseba Urzelai and Dario Floreano. Evolution of adaptive synapses: Robots with fast adaptive behavior in new environments. *Evolutionary Computation*, 9(4):495, 2001.
- [137] Phillipa J.R. Uwins, Richard I. Webb, and Anthony P. Taylor. Novel nano-organisms from australian sandstones. *American Mineralogist*, 83:1541–1550, 1998.
- [138] F. G. Varela, H. R. Maturana, and R. Uribe. Autopoiesis: The organization of living systems, its characterization and a model. *BioSystems*, 5:187–196, 1974.
- [139] John von Neumann. The general and logical theory of automata. In L.A. Jeffress, editor, *Cerebral Mechanisms in Behavior-The Hixon Symposium*, pages 1–31. John Wiley & Sons, New York, NY, 1951.
- [140] John von Neumann. Probabilistic logics and the synthesis of reliable organisms from unreliable components. In Claude Elwood Shannon and John McCarthy, editors, *Automata Studies*, pages 43–98. Princeton University Press, Princeton, NJ, 1956.
- [141] W. Grey Walter. An imitation of life. *Scientific American*, pages 42–45, May 1950. poor quality but readable.
- [142] W. Grey Walter. A machine that learns. *Scientific American*, 185(5):60–72, August 1951.
- [143] Michael Wigler and Bud Mishra. Wild by nature. *Science*, 296:1407–1408, May 2002.
- [144] Claus O. Wilke, Jia Lan Wang, Charles Ofria, Richard E. Lenski, and Christoph Adami. Evolution of digital organisms at high mutation rates leads to survival of the flattest. *Nature*, 412:331–333, July 2001.
- [145] Stuart Wilkinson. “Gastrobots”—benefits and challenges of microbial fuel cells in food powered robot applications. *Autonomous Robots*, 9:99–111, 2000.
- [146] Christopher Wills and Jeffrey Bada. *The Spark Of Life*. Perseus Publishing, Cambridge, Massachusetts, 2000.
- [147] William B. Wood and the Community of *C. elegans* Researchers, editors. *The Nematode Caenorhabditis Elegans*. Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY, 1988.

- [148] Kielan Yarrow, Patrick Haggard, Ron Heal, Peter Brown, and John C. Rothwell. Illusory perceptions of space and time preserve cross-saccadic perceptual continuity. *Nature*, 414:302–305, November 2001.
- [149] Gabriel Yedid and Graham Bell. Macroevolution simulated with autonomously replicating computer programs. *Nature*, 420:810–812, December 19/26 2002.
- [150] Mark Yim, Ying Zhang, John Lamping, and Eric Mao. Distributed control for 3d metamorphosis. *Autonomous Robots*, 10:41–56, 2001.
- [151] Jens Ziegler and Wolfgang Banzhaf. Evolving control metabolisms for a robot. *Artificial Life*, 7:171–190, 2001.