EVOLUTION
The Human Predator

EXPLORATION
Journey to the Bottom of the Sea

NEUROSCIENCE
The Brain's Genetic Geography

SCIENTIFIC AMERICAN

ScientificAmerican.com
APRIL 2014

Cosmic Dawn

How the first stars ended the dark ages of the universe

SPECIAL REPORT
Medicine's RNA Revolution

IEEE Life Sciences Drives Innovation Across Multiple Domains

Advances in healthcare are increasingly dependent on applying knowledge from medicine, the exact sciences, the life sciences, computing and engineering. Commercial solutions to healthcare challenges must tap several domains of expertise just to emerge from the lab, let alone reach the market and succeed. Healthcare is truly multidisciplinary.

Whether you are a physician, researcher, educator, scientist or an engineer, we invite you to discover the deep, interdisciplinary resources provided by the coalition for life sciences at the IEEE.

No other global organization offers the breadth and depth of varied resources found under the IEEE Life Sciences umbrella. Our membership is engaged in fundamental research and commercial applications in the life sciences – in educational outreach and the development of relevant standards. You'll meet your industry and academia colleagues in the pages of our award winning, peer-reviewed journals and at the conferences we hold worldwide.

The IEEE Life Sciences Portal is the industry repository for the foremost news, links to key journals, commentary, conference information, and videos. More than 3,000 experts in healthcare, government, academia, research and related associations subscribe to the IEEE Life Sciences Monthly eNewsletter for up-to-date life sciences insights. In addition, IEEE develops many of the key standards that ensure the interoperability, safety and affordability of devices and systems that enable life sciences research and are used in diagnostics and treatment in clinical settings. We thus offer a "one-stop shop" that can support your path to professional development and the market.

IEEE Life Sciences is the platform for a "meeting of the minds," enabling collaboration across domains which is the most effective path to innovation. IEEE holds conferences that attract participants from different communities, and combine the emerging challenges and innovations across all aspects of the life sciences. We engage with all principal disciplines within biomedical engineering, and with diverse areas ranging from medical imaging to information technology in biomedicine and nanobiotechnology.

Virtually every current innovation in healthcare depends on a mix of technological expertise across an array of disciplines. Consider a few examples.

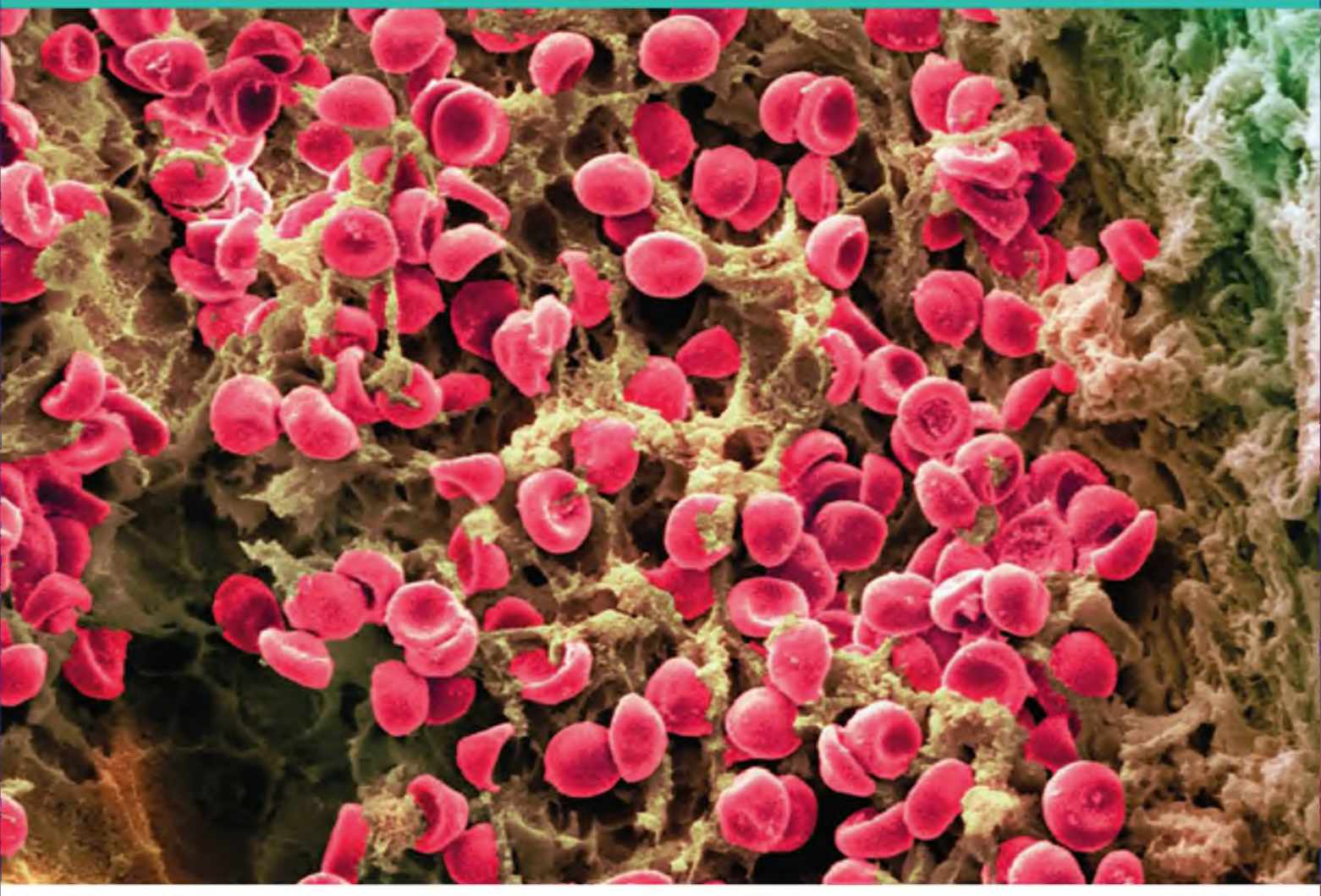
Nearly all technical systems for diagnosis and treatment of patients, from birth to the end-of-life, rely on sensors, actuators, algorithms, data networks and related computing innovations in data management, mining and security. The life sciences in fact may well become the most computer-intensive scientific field of the 21st century. A good example of the ensuing advantages is the use of data fusion in diagnostics. This is the integration of multiple data sources, combined to create a comprehensive view of diagnostic information – such as image fusion of MRI and CT scans or PET scans and CT scans. Fusion systems collect information from different sources and serve in decision-support frameworks that assist physicians. Robotic surgery, dependent on the disciplines of computing and engineering, is another example. It offers physicians an unprecedented degree of precision and dexterity. Advances in 3D printing promise to revolutionize the development of new replacement organs and limbs for the human body. Predictive toxicology is critical to the development of new medicines.

Recognizing the value of industry contributions to advance topics like these, the new IEEE Life Sciences Letters, a digital open access journal, is dedicated to the timely publication of high quality manuscripts that apply methods of quantitative analysis to biological problems at the molecular, cellular, organ, human and/or population levels. We invite you to publish your research in the new open access journal, which covers personalized medicine, pharmaceutical engineering, synthetic biology, and systems biology.

Supported by your contributions, IEEE Life Sciences provides a clear path to establish new standards, share best practices, publish new findings, and provide educational opportunities to further life sciences for the benefit of humanity.

Great ideas need support. Join us. Participate. Together, we can turn great ideas into reality.

There's an amazing world within us all. Join us in exploring it.



Driven by tremendous advancements in technology, the lines between traditional science and engineering methodologies are often blurred.

Bringing clarity to these blurred lines, **IEEE Life Sciences** has developed the **Life Sciences Portal**—an information resource for stakeholders that have interests in life sciences related technology and its applications.

IEEE Life Sciences is developing new opportunities – such as conferences, events, publications, and education programs – and has created an online community that will be the foremost global resources for life sciences technologies, information and activities.

To contribute to **Life Sciences Letters**, visit **open.ieee.org**. To join our community, visit the **IEEE Life Sciences Portal** at **lifesciences.ieee.org**.

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