

Redstart Technologies

A compact infrared single-photon camera enabling safer, deeper, and faster bioimaging.

In a nutshell

Current bioimaging systems force a trade-off between image quality, speed, imaging depth, and sample safety. Achieving clear images in low-light or dynamic environments often requires high illumination levels that can damage tissue or slow acquisition speeds.

Redstart solves this with a next-generation infrared (IR) single-photon camera that combines deep tissue penetration with extreme sensitivity—enabling faster, safer, and more precise bioimaging.

Why is our technology important?

Conventional silicon cameras are limited to visible light, restricting their ability to image deep into biological tissue. While infrared imaging offers deeper penetration and improved safety, existing IR cameras are bulky, expensive, noisy, and require complex cooling systems, making them impractical for widespread use.

Recent advances in single-photon detection (SPAD technology) have demonstrated extraordinary sensitivity and timing precision—but these breakthroughs have largely remained confined to visible wavelengths.

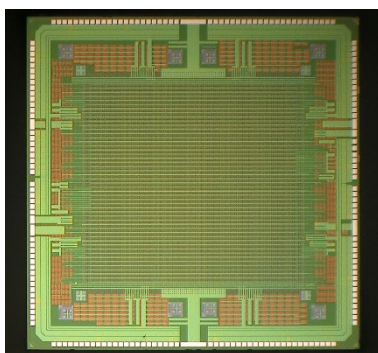
Our technology bridges this critical gap by bringing single-photon sensitivity in the infrared into the bio-imaging domain. Through innovations in on-chip noise suppression and novel pixel architectures, we are creating a step-change in bioimaging capability and unlocking new applications in medical diagnostics and life sciences.

The benefits of our solution

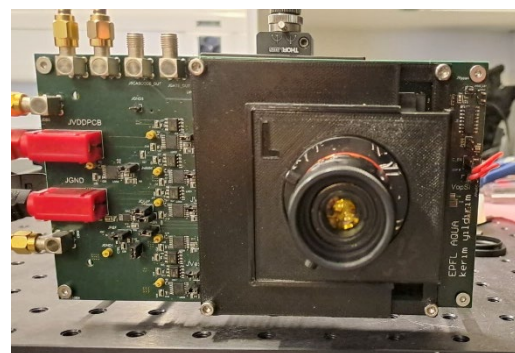
- Deeper imaging: See further into biological tissue using infrared wavelengths
- Ultra-high sensitivity: Detect extremely weak signals at the single-photon level
- Low-dose imaging: Minimize photodamage and preserve live samples
- High-speed acquisition: Capture fast biological processes in real time
- Compact & scalable: No bulky cooling → easier integration into systems
- Superior image quality: Reduced noise via patented pixel-level design

Keywords

Single-photon Camera, Infrared, Bio-imaging, Image Sensors



Micrograph of Readout Integrated Circuit



Infrared Single Photon Camera Prototype

Founding Team

Baris Can Efe

Halil Kerim Yildirim