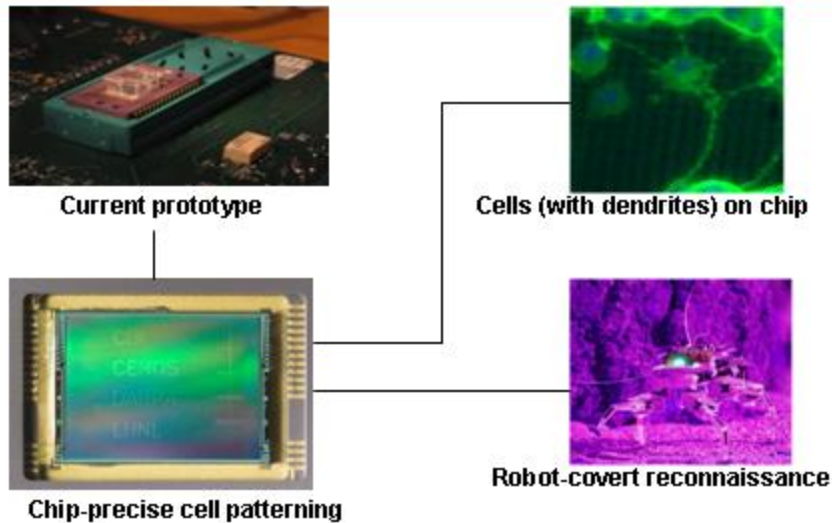


Neural Matrix Chips For Chemical and Biological Weapons Detection

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Key Discriminators

OBJECTIVE: development of a small, capable sensor that can detect both known and uncharacterized chemiothreats and that can be deployed covertly and widely

New technology: A device consisting of patterned growth of living cell networks which detects and identifies known biological and chemical agents and be able to classify and define the degree of toxicity of uncharacterized agents.

Timeliness: This technology would have the adaptability of biological systems and the speed and scalability of electronic systems. Our process has the potential to scale to several orders of magnitude (> 1 million pick-up points) more neurons than other published techniques.

Conduct of research: The research focuses on a highly novel method of monitoring cellular action potential activity as a function of time and of location throughout a large cellular array, using low-cost, mass-produced CCD chips.

Problem/Readiness/Champions

Problem Being Addressed

This project addresses a highly novel approach to detect toxic agents. Development of low-cost, mass-produced, neural chips could have far-reaching implications beyond their use in military and home-land defense spheres. Neural matrix chips could serve as a platform for pharmacology development through mass screening of drug candidates and in the identification of individuals and substances based on unique odor signatures

Technology Readiness Level

Preliminary data indicate the project is at level 3.

Champions

CEROS has awarded 2 years of funding totaling \$866,569 ending July 2006.

Milestones/Deliverable/Date/Status

Milestone/Deliverable	Month	Status
1. Execution of Contract	Dec 05	Completed
2. Execution of Subcontract	Dec 05	Completed
3. Laboratory Setup	Jan 06	In progress
4. Human Neuron Testing	Apr 06	Future
5. Detection of Signal Patterns	Sep 06	Future
6. Test Toxin Effects on Cell Signaling	Dec 06	Future