

Introducing SG CapTM, a unique immobilization method optimized for multiplex diagnostics, with higher sensitivity and specificity than currently available technology

PCL, Inc.

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Industry Sector	Diagnostic, Drug discovery, Medical device
Therapeutic Area	Hospital and Surgery
Stage of Development	Clinical Trials

1. Summary

- SG Cap™ is a molecule-capturing platform for studying molecular interactions, including drug-target pairs and protein-protein relationships.
- SG Cap™ immobilizes compounds in their natural conformation without affinity tags or other chemical modification.
- SG Cap™ sol gel formula assembles into a three-dimensional network of pores that are connected by larger channels. The porous format significantly increases load capacity while interconnecting channels reduce diffusion distances compared to competing two-dimensional systems.
- Samples flow through channels and are captured inside pores, where they float freely in their native conformations. Samples within the pores can be studied from all angles, while non-specific material easily washes away, reducing the signal-to-noise ratio.
- SG Cap™ is a unique immobilization method that exceeds the sensitivity and specificity thresholds of currently available technology.

2. Applications

- Research purposes
SG Cap™ immobilizes proteins, antibodies, chemicals and other molecules in their natural conformations without covalent modifications. Researchers can make any biochips necessary for research purposes
- Multiplex diagnostic test kit
SG Cap™ is used for multiplex diagnostic kits that screen blood samples for various diseases simultaneously
- Identification of drug targets
SG Cap™ can identify cellular targets for drugs. This technique can be used to identify target molecules for your library of known drugs or PD (pharmacodynamic) /PK (pharmacokinetic) – optimized compounds.

3. Market Feasibility

- The IVD (In vitro diagnostics) market is about 44 billion USD, with the top ten companies holding 80% of the market share.
- Development of technology that meets market needs, along with collaboration with international companies, is required.

4. Type of Business Relationship Sought (include licensing availability)

- 1) Research collaboration or co-development
- 2) Manufacturing a customized diagnosis platform
- 3) Technology transfer

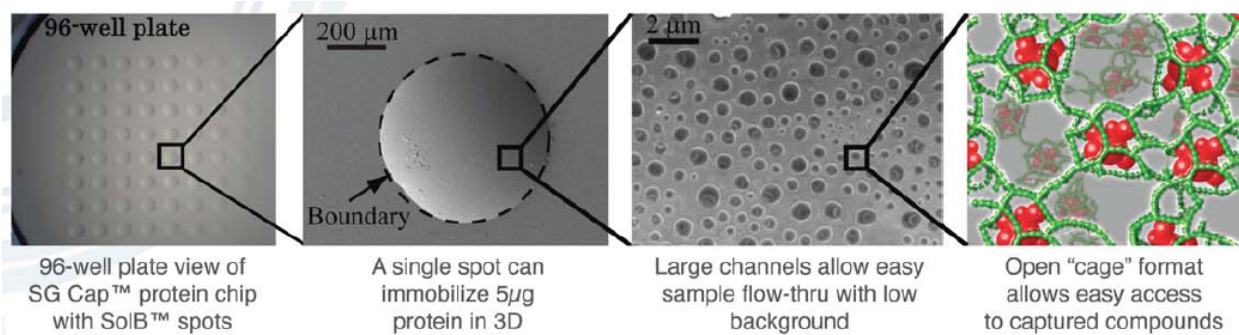
5. Technical Advantages

- SG Cap™ captures large amounts of chemicals or macromolecules in their natural conformation, in an active orientation, and without the need for affinity-tag modifications.
- SG Cap™ can immobilize 100X more protein than competing 2D surfaces. Because molecules are captured instead of bound, many more functional groups and epitopes on the immobilized molecule are biochemically available to capture targets.
- These multiples increase the sensitivity and specificity of certain diagnostic assays and greatly improve the study of molecular interactions between drug-target, antigen-antibody and protein-aptamer pairs.

6. Technical Highlighted Summary

- High specificity and sensitivity
SG Cap™ maintains the native conformations of embedded antigens or antibodies, increasing their specific activity and enabling 1000x greater sensitivity than that of current diagnostic technologies.
- Multiplex capabilities
 - Various markers for multiple diseases can be spotted in a single well.
 - No interference response or cross reaction between spots
- Low cost
Sol-gel and polymer substrate lowers the material cost to one sixth of conventional ELISA kit screening tests.

7. Mechanism (MOA)



8. Patent Information and Status

- The patent based SG Cap™ was registered in South Korea in 2013 and applied in the USA, Europe, Brazil, India, Japan, and China.

9. Patent Number(s)

Title	Country	Patent Application No.	Original Assignee	Filing Date	Inventors
SOL-GEL KIT FOR PREPARING BIOCHIP AND METHOD FOR PREPARING BIOCHIP USING THE SAME	Korea	10-1274765	PCL,Inc	2013.06.17	Minjoung Jo, Seram Lee
SOL-GEL KIT FOR PREPARING BIOCHIP AND METHOD FOR PREPARING BIOCHIP USING THE SAME	PCT	PCT/KR2011/003105	PCL,Inc	2011.04.27	Minjoung Jo, Seram Lee
SOL-GEL KIT FOR PREPARING BIOCHIP AND METHOD FOR PREPARING BIOCHIP USING THE SAME	US	13/096,991 (39535)	PCL,Inc	2011.04.28	Minjoung Jo, Seram Lee
SOL-GEL KIT FOR PREPARING BIOCHIP AND METHOD FOR PREPARING BIOCHIP USING THE SAME	EU	EP 11164159 3	PCL	2011.04.28	Minjoung Jo, Seram Lee

SOL-GEL KIT FOR PREPARING BIOCHIP AND METHOD FOR PREPARING BIOCHIP USING THE SAME	CN	2.0118E+11	PCL	2011.12.20	Minjoung Jo, Seram Lee
SOL-GEL KIT FOR PREPARING BIOCHIP AND METHOD FOR PREPARING BIOCHIP USING THE SAME	BR	11 2013 027811 0	PCL	2013.10.29	Minjoung Jo, Seram Lee
SOL-GEL KIT FOR PREPARING BIOCHIP AND METHOD FOR PREPARING BIOCHIP USING THE SAME	JP	2014-508266	PCL	2013.10.25	Minjoung Jo, Seram Lee
SOL-GEL KIT FOR PREPARING BIOCHIP AND METHOD FOR PREPARING BIOCHIP USING THE SAME	IN	8614/CHENP/2013	PCL	2013.10.25	Minjoung Jo, Seram Lee

10. Key Words

Multiplex, Sol gel, immobilization, Three-Dimensional, High specificity, High sensitivity, ELISA, In Vitro Diagnostics

11. Company Description

PCL is a leader in multiplex diagnostic tests and services based on the Sol-Gel Capturing system, which immobilizes bio-molecules in a three-dimensional gel matrix. PCL's multiplex diagnostic kits have a higher sensitivity and specificity compared to currently available tests.

PCL has three categories of products: blood-based diagnostic tests, research reagents and tools, and drug discovery R&D services. The Hi3-1 blood-based diagnostic kit is a high-throughput multiplex diagnostic test done on microtiter plates that screen blood samples for HIV and HCV simultaneously.