



## LabChip GXII Technology for Vaccines and Biologics

Caliper's lab-on-a-chip technology has become a critical tool in the research, development and manufacturing of Vaccines and Biotherapeutic Drugs. This separations-based analytical technology platform consists of a variety of microfluidic chips and reagent kits along with LIF-instrumentation, for the characterization of biomolecules including DNA, RNA, Proteins and Carbohydrates.

In the field of Vaccines and Biologics, Caliper's LabChip GXII has been widely adopted across the Discovery and Development pipeline, in compliant as well as non-compliant facilities, by a large number of pharmaceutical and vaccine developers. The application areas and quotes from key users attesting to the major positive impact of this technology are outlined below:

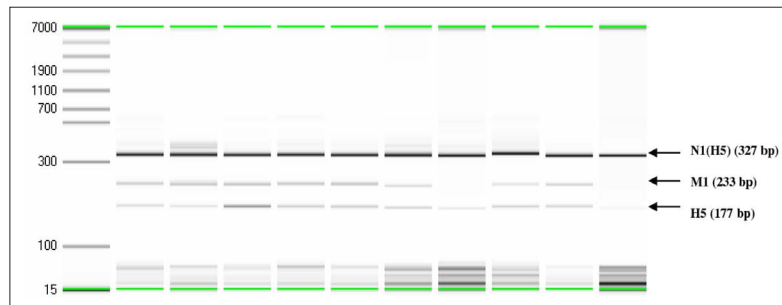
### Nucleic Acid Analysis

- Assessment of Subunit Cloning Constructs
- Endpoint PCR analysis
- Viral Strain Typing
- RNA Expression Studies

### Protein Analysis

- Recombinant Subunit Expression Optimization and Tracking
- Subunit Purification Tracking
- Formulation Development- Excipient Assessment, Purity, Stability, Modification, Aggregation, Degradation
- Product Quality Assessment- Purity, Stability, Modification, Aggregation, Degradation
- Virus Like Particle (VLP) Characterization

## Vaccine Strain Development/DOE



Journal of Clinical Microbiology, September 2008, p. 3063-3072, Vol. 46, No. 9

***“Finally, the process that we have described reduces both experimentation cost and time while increasing throughput, making possible what-if experiments that, up to now, had been either prohibitively expensive or too complex to perform. This process results in better solutions, decreased development time and increased productivity.”***

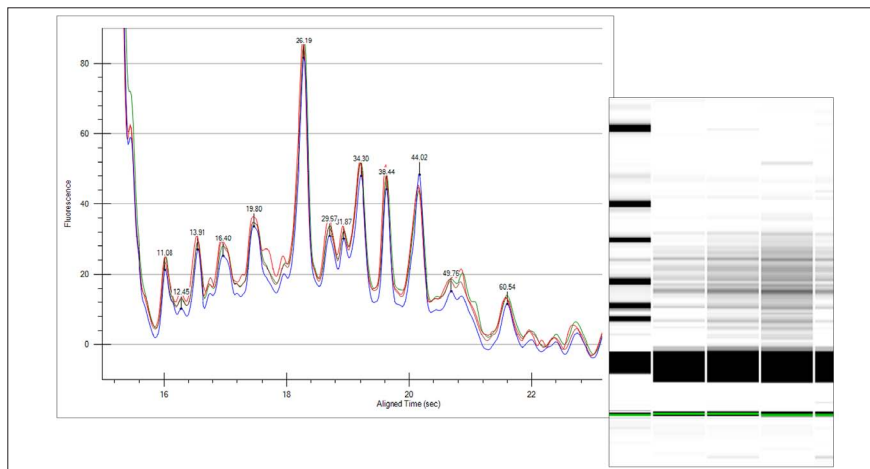
Vertex, Anal. Biochem. 2006:351 p122



***“Microfluidic analysis of experiments moves the bottle neck from data analysis to experimental design.”***

NCI-SAIC, COG 2009

## Protein Subunit Expression Optimization



***10X Increase in Yield possible due to high throughput expression monitoring.***

Dow/Pfenex Subunit Vaccine



***“Expression screen by magnetic bead purification and Caliper LabChip gives objective and quantifiable results.”***

Boehringer Ingelheim, Global Protein Summit, London, 2006



## Vaccine Formulation Development/Formulation Stability

***Screen the performance of pharmaceutical excipients. The LabChip GXII is used to monitor the chemical and physical stability of the antigen within complex matrix of excipients, before and after stress.***

Scientist, R&D Formulation Development



## Quality Control Methods Development/Quality Assurance

***Including Purity, Stability, Degradation, Aggregation, Modifications***

***“LabChip enables us to perform experiments in an afternoon that would have required a month.”***

Biogen-Idec, COG 2009



***“LabChip is a sole enabling technology for therapeutic protein analysis.”***

VTU technology, COG 2008

