The PLGA/Imiquimod combination is 70% PLGA and 30% Docetaxel.

**Pneumococcal Protein Specific IgG ELISA**: Developed in collaboration with Dr. Moon Nahm, University of Alabama.

**In Vitro ELISA** and **DIONEX HPLC** methods to quantify polysaccharide levels in PRINT nanoparticle formulations.

**OPK Assay**: A robust and reliable method for quantifying several antigens in PRINT formulations.

**Lyophilization of PRINT Formulations**: Does not diminish the stability of the formulations.

**In Vivo Neutralization Assay**: Evaluates protection against multiple bacterial species.

**PLD IgG**: Robust neutralizing antibodies were generated and shown to be functional by neutralizing hematolytic activity of PLY.

**Non-antigen controls** were shown to have statistically significant increases in IgG response.

**Immunogenicity of Antigens**: Maintained inPrint formulations for IgG response.

**Stability Analysis**: Robust PLD IgG antibodies were generated and shown to be functional by neutralizing hematolytic activity of PLY.

**Two Non-adjacent bivalent formulations** showed statistically equivalent responses to Prevnar 13 when tested individually for IgG response against each antigen.

**PRINT Platform**: Demonstrates a wide-ranging multi-antigen formulation, manufacturing, and analytical capability.

**Quality by Design**: Enables high-throughput quality control and process optimization.

**Scalable Manufacturing Platform**: Proprietary technology allows for efficient production of multi-valent vaccines.

**Minimal Facilities Burden**: Small footprint, low CapEx equipment (denatured or soluble PLD alone).

**PRINT Technology Offers the Flexibility to Target Humoral and Cellular Immunity Towards Pneumococcal Specific Targets**.

**PRINT Is Compatible with Numerous Types of Pharmaceutical Materials, Including Small Molecules and Biologics**.

**Pneumococcal Polysaccharide Vaccine Development Pathway**.

**PRINT Pneumococcal Polysaccharide Vaccine Elicits IgG Response in Rabbits**.

**Lyophilization of PRINT Formulations does not diminish the immunogenicity of antigens**.

**Universal Polymer Base** manufactured to ensure scalability and ease of purification.

**Filtration Recovery Yield** > 65% for effective primary, secondary immunization.

**Simplified assembly of multiple antigens** ensures accessibility to circulating antibodies.

**Multiple copies of antigen incorporated** allows for effective primary, secondary immunization.

**PRINT Is Compatible with Numerous Types of Pharmaceutical Materials, Including Small Molecules and Biologics**.

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**The PRINT platform**: Demonstrates the effectiveness of downstream sterile filterability and lyophilization of PRINT formulations.

**The PRINT manufacturing process** allows for rational design of next generation multivalent vaccines to address developing world needs.