

**Category**

Best Startup

**Product/Solution Name**

Jurata's Thin Film Technology

**Date of Approval**

N/A

**Indications**

Infectious Diseases, Genetic Disorders, Autoimmune Disorders, Inflammatory Diseases, Cancer

**Therapeutic Categories**

Vaccines, Oncology, Gene Therapy, Therapeutic Antibodies

**Attached Files:**

- Jurata Thin Film\_NonConf w Data\_Apr2023.pdf

**Background information and need for solution/product**

The accessibility of people to life-saving temperature-sensitive medications in low- and middle-income countries (LMICs) and low-resource areas are clear shortcomings of current pharmaceutical supply chain. Our thin film technology addresses multiple shortcomings across the entire pharmaceutical supply chain, including manufacturing, distribution, storage, and delivery, potentially revolutionizing global access to pharmaceutical care. Our technology has the ability to significantly reduce spoilage and waste across the biopharmaceutical industry, while greatly increasing deployment capability of vaccines and biological drugs on a global scale.

**History of the development of the solution/product**

Jurata's patented formulation and process enables storage and distribution of biological therapeutics without the need for cold-chain infrastructure. Our technology was originally developed in the laboratory of Dr. Maria Croyle (Jurata's Scientific Founder) at the University of Texas at Austin to enable needle-free administration of Ebola vaccines in LMICs. Increased use of our thin film technology beyond this original purpose was spearheaded by Dr. Irnela Bajrovic (Jurata's CSO) during her undergraduate and graduate studies in Dr. Croyle's lab.

In peer-reviewed publications, we have shown that viral vectors formulated into our thin films are stable at ambient temperature, remaining efficacious for up to 3 years. In a compelling preclinical model, we demonstrated that a 50% effective dose of Ebola vaccine embedded in our films could be shipped across the country without any temperature control, rehydrated, and administered via an intranasal spray to confer a 100% survival in non-human primates challenged with a lethal dose of Ebola. Moreover, we have shown that our thin films can be used to administer vaccines directly under the tongue (sublingual) or inside the cheek (buccal), eliminating the need for rehydration and enabling needle-free delivery.

**Why this solution/product is innovative, the broad implications for future research, and/or how it will improve the human condition**

Jurata's innovative solution addresses major shortcomings of current pharmaceutical supply chain by establishing a simple and rapid production process that increases manufacturing efficiency, removes dependance on costly, specialized cold chain infrastructure, and enables needle-free delivery.

Our patented technology immobilizes vaccines and other biological therapeutics into a solid thin film matrix, preserving the three-dimensional structure and thereby retaining biological efficacy. The resultant films are completely thermostable, enabling storage of these life-saving therapeutics at ambient temperature, and removing the need for cold chain logistics. At the point of administration, films can either be delivered via the oral mucosa (sublingual/buccal), or rehydrated for delivery via intranasal spray, as well as intramuscular, subcutaneous, or intravenous injection.

Our thin film technology requires no temperature control measures because it stabilizes vaccines and biologics at a wide range of temperatures, including excessive heat, extreme cold, and multiple freeze-thaw cycles. Furthermore, our manufacturing process is complete within a working day, facilitating fill/finish of temperature-sensitive API at room technology in only 3-4 hours. Most importantly, we have shown the ability to stabilize the most common viral vector platforms, including mRNA lipid nanoparticles (LNPs), as well as proteins, antibodies, bacteria, AAV, enzymes, and more, supporting the extensive breadth of our technology.

Currently, only a limited number of people have nearby access to the infrastructure required to keep pharmaceuticals cold or frozen, with the lower the temperature required, the fewer people with access to those technologies. Pharmaceuticals embedded in Jurata's thin film technology require absolutely no cold temperatures, including when being distributed around the world. This makes communities, especially in remote areas, particularly benefitting from our thin film technology as it gives them access to life-saving medications that they currently do not have access to. Additionally, our technology benefits from the local economy boosts provided by regional manufacturing that are described above.

**Please provide appropriate references (ie Pubmed links)**

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4525323/>

<https://pubmed.ncbi.nlm.nih.gov/32181330/>

<https://pubmed.ncbi.nlm.nih.gov/34780881/>

<https://pubmed.ncbi.nlm.nih.gov/36414773/>

