

## Vero Cell platform technology

In 1962 the Vero cell line was isolated and immortalized from African Green Monkey kidney cells. Currently, the Vero cell line is the most widely used, successful, and reliable cell line in viral vaccine production in terms of quality, yield and safety. At Intravacc, we have been developing viral vaccines using the Vero cell line since 1987.

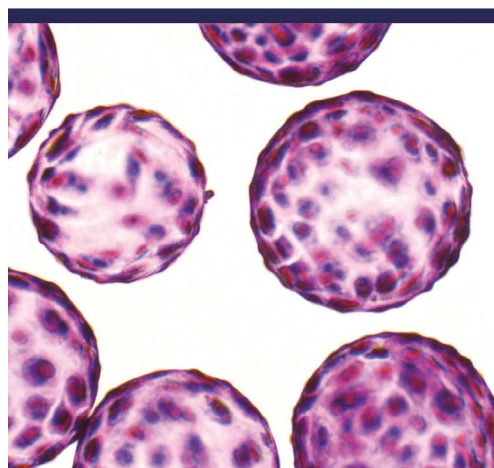
### Vero cells technology

At Intravacc we have a cGMP-grade, regulatory approved, Vero cell line at hand. At this very moment, on a daily basis, our Vero cell line is being used for routine large-scale commercial vaccine manufacturing by clients all over the world. In addition, virus seed lots and clinical batches have recently been produced on the Vero cells, for example Polio virus (for Sabin Inactivated Polio Vaccine (sIPV) manufacturing), Enterovirus (EV71), and Respiratory Syncytial Virus (RSV). Furthermore, besides all up-to-date regulatory documentation at hand, we are proud to state that our Vero cell platform is frequently chosen to be used in vaccine manufacturing. We have established platform viral vaccine production processes at both lab and pilot scale to enable fast-track proof-of-concept. With five sIPV technology transfer partners, and several early lead development collaborations ongoing, we are experienced and comfortable to connect early discovery and late stage vaccine development.

### Partnering

Intravacc aims to co-develop promising leads further along the vaccine development chain in collaboration with partners. We are specialized in taking innovative concepts and new vaccine leads to the next level. The Vero Cell platform technology of Intravacc is open

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**B** IOENGINEERING  
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Vero cell growth supported by microcarrier beads.

### Benefits

- cGMP-qualified cell line
- Directly available Master and Working cell banks
- Extensive clinical use and regulatory history
- Scalable to large volumes at industrial scale
- Extensive track record in technology transfer

for new collaborations, which can range from Vero cell out-licensing to large collaborative co-development agreements that involve pre-clinical development, process optimization & testing, cGMP production, and clinical evaluation.

## VACCINE VIRUSES CULTURED ON INTRAVACC VEROCCELL TECHNOLOGY

Virus	Vaccine	Discovery	Clinical	Licensed
Poliovirus	IPV	[Progress bar showing 100% completion]		
Poliovirus	Sabin IPV	[Progress bar showing ~90% completion]		
Poliovirus	OPV	[Progress bar showing ~90% completion]		
Semliki Forest Virus	HPV	[Progress bar showing ~90% completion]		
Respiratory Syncytial Virus	RSV	[Progress bar showing ~50% completion]		
Enterovirus	EV-71	[Progress bar showing ~50% completion]		
Enterovirus	CV-A16	[Progress bar showing ~50% completion]		
Measles	MV	[Progress bar showing ~50% completion]		
Rabies	Rabies	[Progress bar showing ~50% completion]		
Rotavirus	IRV	[Progress bar showing ~50% completion]		

### Sabin-IPV animal compound free process development and optimization

The sIPV production process is being optimized in order to not only reduce production costs but also to have an animal compound free process. This is done to minimize the risk of potential adverse effects (e.g. the potential transfer of adventitious viruses and/or prions from animal derived materials). Processes were optimized following QbD methodology and using a DoE approach.

### Development of a novel chemically defined culture medium

Having a cell culture medium with a defined composition allows to obtain in-depth scientific understanding of the ongoing (bio)chemical phenomena during cell growth and virus replication. This can be translated into better process control and cost reduction. In collaboration with one of our partners, we have developed a novel chemically defined culture medium which can not only sustain Vero cell growth in a controlled manner but also be used for virus production.

### Development of improved Vero cells for increased production of viruses

For future large scale vaccine production Intravacc develops single cell suspension growth, and optimizes growth rate, nutrient use, and virus yield.

### Intravacc's R&D pipeline

- Vaccine development
- Adjuvant development
- Alternatives for animal testing (3R's)
- Formulation and thermo-stabilization of vaccines
- Contract based process development and consultancy on production and purification of bacterial as well as viral vaccines

### Intravacc

Intravacc is a renowned, not-for-profit R&D organization. With our unique capabilities and infrastructure, we are able to optimize vaccines, vaccine processes and vaccine technologies. Our aim is to increase equality in access to vaccines throughout the world in order to contribute to public health. We achieve this by transferring our knowledge and technologies to public and private partners worldwide and through collaborative R&D. A team of 150 professionals is at your disposal at Utrecht Science Park Bilthoven in The Netherlands.

### Contact

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