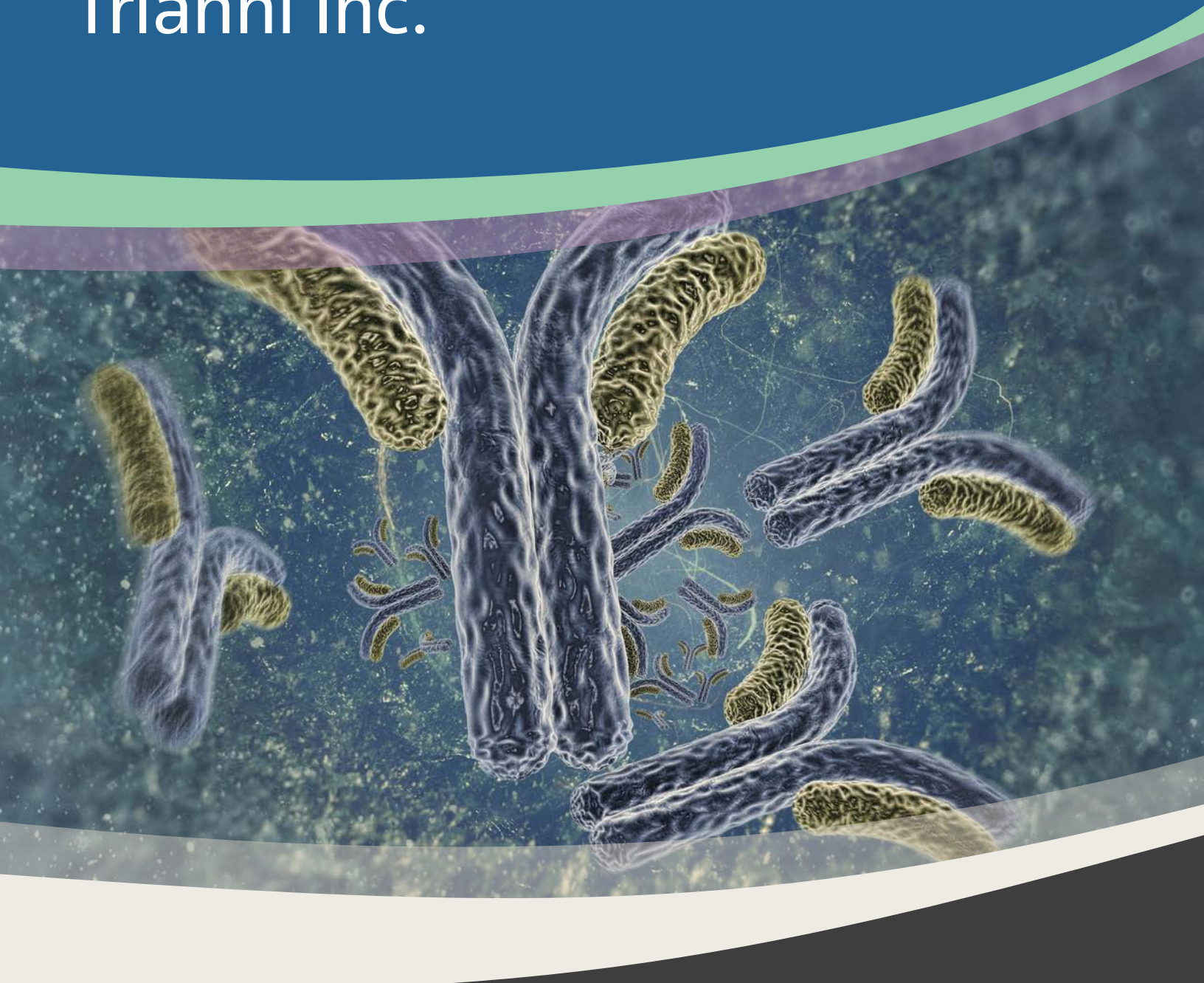


BioWorld's

PARTNER *in* **FOCUS:**

Trianni Inc.



MORE ADVANCED PHARMA, BIOTECH FIRMS USING TRIANNI MOUSE FOR ANTIBODY DISCOVERY

Trianni Inc. did not invent a better mousetrap. Trianni Inc. invented a better mouse.

That doesn't mean the world is "beating a path" to the San Francisco company's door, as the saying goes. Rather, it means cutting-edge pharmaceutical and biotech concerns – large and small – have access to a transgenic mouse platform that is not just the best in its class, it's the only transgenic antibody discovery platform ever developed that offers the entirety of human antibody variable gene diversity in a single organism.

"We're very flexible regarding terms and license structures," says David Meininger, Chief Business Officer at Trianni, emphasizing that the company currently works with a number of major life sciences organizations, and is open to business deals with smaller pharma and biotech enterprises, entrepreneurs and academic researchers as well. "We can service any size account," he stresses. "We can tailor a mix of cash commitment and milestone and royalty payments such that the economics make sense."

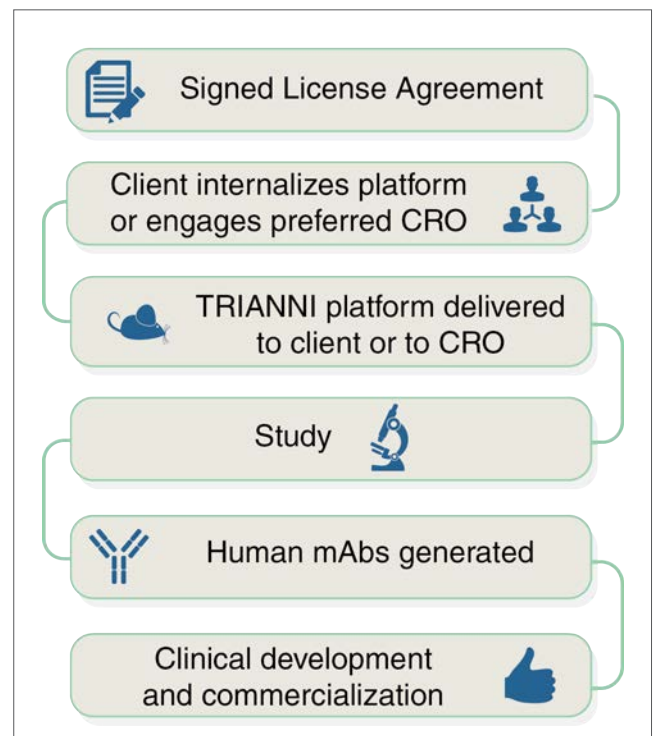
Trianni welcomes customers that already have licenses to older mouse and rat technologies. "The benefits of switching to Trianni are compelling," Meininger notes. "People need to talk to us about switching. We've yet to encounter a case where the Trianni Mouse wasn't viewed as significantly better than a competing technology after side-by-side evaluation."

The Trianni Mouse is a transgenic solution with several distinctive features, principle among them being expression of the full repertoire of human heavy- and light-chain variable gene diversity. In generating the platform, Trianni employed a unique combination of in silico gene optimization, DNA synthesis and targeted genomic insertion. The platform, Meininger points out, has been extensively validated, both internally and externally, and has repeatedly proven itself ideally suited for rapid, efficient isolation of high-quality, fully human therapeutic monoclonal antibodies.

That's reason enough to look into doing business with Trianni. But the company isn't resting on its laurels. Business partners now and in the future will benefit from its active engagement in enhancing and expanding its product mix, including:

- Mice with B cells that display a portion of their expressed antibody on the cell surface throughout the B-cell maturation process;
- Autoimmune mice that can produce antibodies against all epitopes; and
- Mice that produce "true" bispecific antibodies

"It's vitally important to Trianni to make it possible for any Pharma or Biotech company, be it a global player, mid-cap or start-up, to leverage the Trianni Mouse to develop highly effective biologics," Meininger adds. "Trianni works closely with prospective partners to define agreement terms designed to incentivize maximal platform utilization." Contact Trianni at info@trianni.com for more information.





'WE WANT TO TRANSACT'

A Q&A WITH DAVID MEININGER, CHIEF BUSINESS OFFICER, TRIANNI INC.

What kind of customers use the Trianni Mouse?

Trianni has partnered with several Big Pharma including Merck and Takeda as well as several Biotechs including Achaogen and Innovent. We have strong interest from a range of additional companies engaged in antibody discovery as well as top academic labs.

Has the platform been tested through actual use?

Definitely. Some of our Big Pharma customers have carried out extensive diligence, including benchmarking against competing transgenic technologies and against wild-type mice. They concluded in each case that the Trianni Mouse is immunologically equivalent to wild-type mice and that it generates superior antibody panels in comparison to alternative transgenic platforms.

Is the technology IP protected?

Absolutely. The Mouse benefits from intellectual property protection in China, the Russian Federation and Australia, and similar protection will soon follow in the United States, the European Union and elsewhere. Also, the discovery platform has passed robust "freedom to operate" review at each of our Big Pharma partners.

Contact Trianni info@trianni.com for more information.

TRIANNI PLATFORM HAS MORE OF WHAT MAKES A MOUSE HUMAN

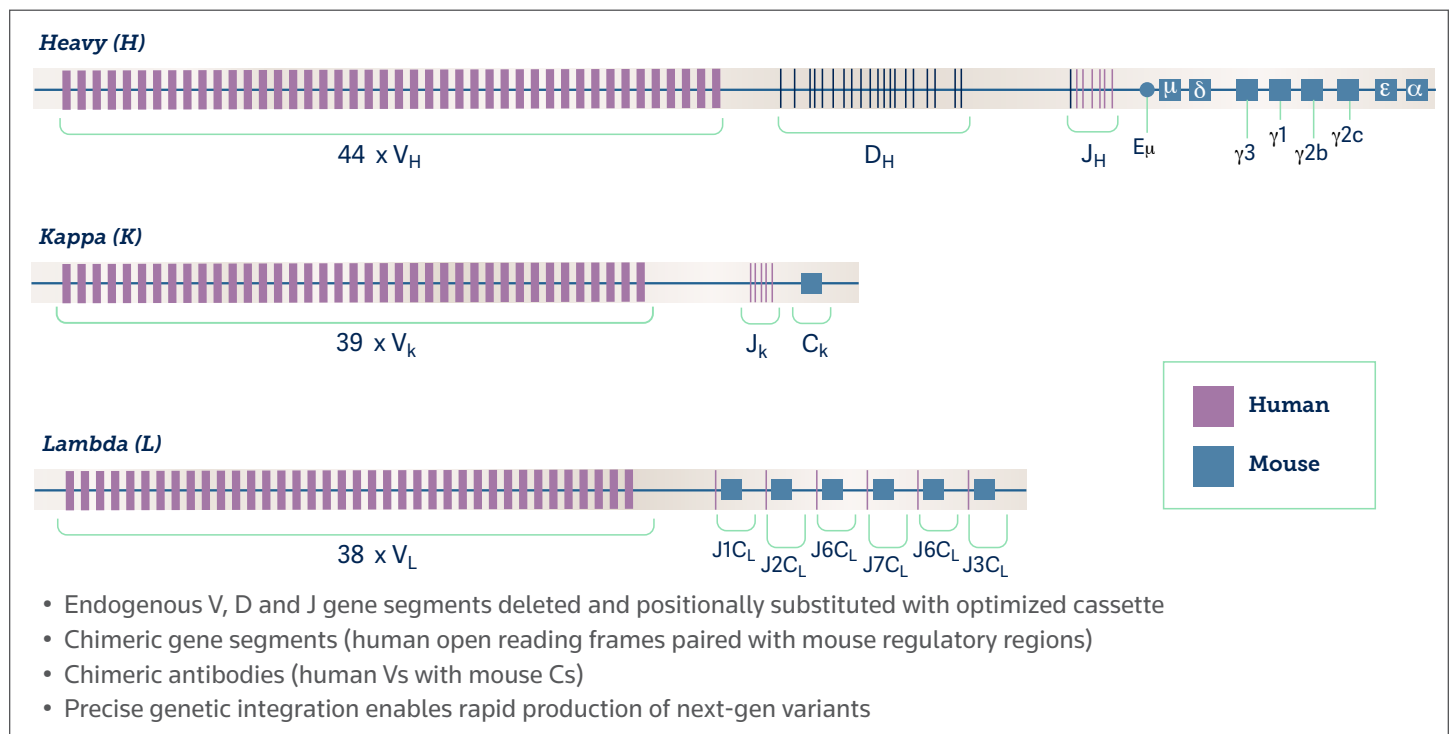
The Trianni Mouse is, simply, better.

How so? While early transgenic mice were significantly limited in several crucial aspects, Trianni used an advanced design and engineering strategy to create the next generation of biologic discovery resource – the best-in-class Trianni Mouse. “All the machinery is of mouse origin with promoters and enhancers optimized to drive maximal antibody titers,” explains David Meininger, Chief Business Officer at Trianni. “Only the V gene exons are human. So, its immune responses are indistinguishable from a wild-type mouse.”

Other mouse platforms are incomplete. In fact, one notable competitor produces just a fraction of theoretical human heavy-light chain diversity. Because The Trianni Mouse was made via DNA synthesis of cassettes containing human exons, in silico-optimized regulatory and other mouse elements, all human antibody genetic diversity could be built in. Trianni’s Mouse generates antibody titers and immune responses that are better than the alternatives – by definition.

KEY ADVANTAGES OF THE TRIANNI MOUSE

- Engineered versions of all three antibody genetic loci – Heavy, Kappa and Lambda
- Novel chimeric antibody gene segments, each comprised of human coding sequences combined with mouse regulatory genomic sequences
- Expression of a full repertoire of human heavy- and light-chain variable domains
- Multiple enhancements to antibody gene segments
- Retention of all mouse constant domains
- Two light chain loci capable of expressing both Kappa and Lambda light chains
- Normal genomic rearrangement in developing B cells leading to normal B cell development
- Normal immune responses
- Robust somatic hypermutation and class switching



BETTER MOUSE TECHNOLOGY

Trianni didn't invent the transgenic mouse approach to monoclonal antibody discovery. But the company did more or less perfect it.

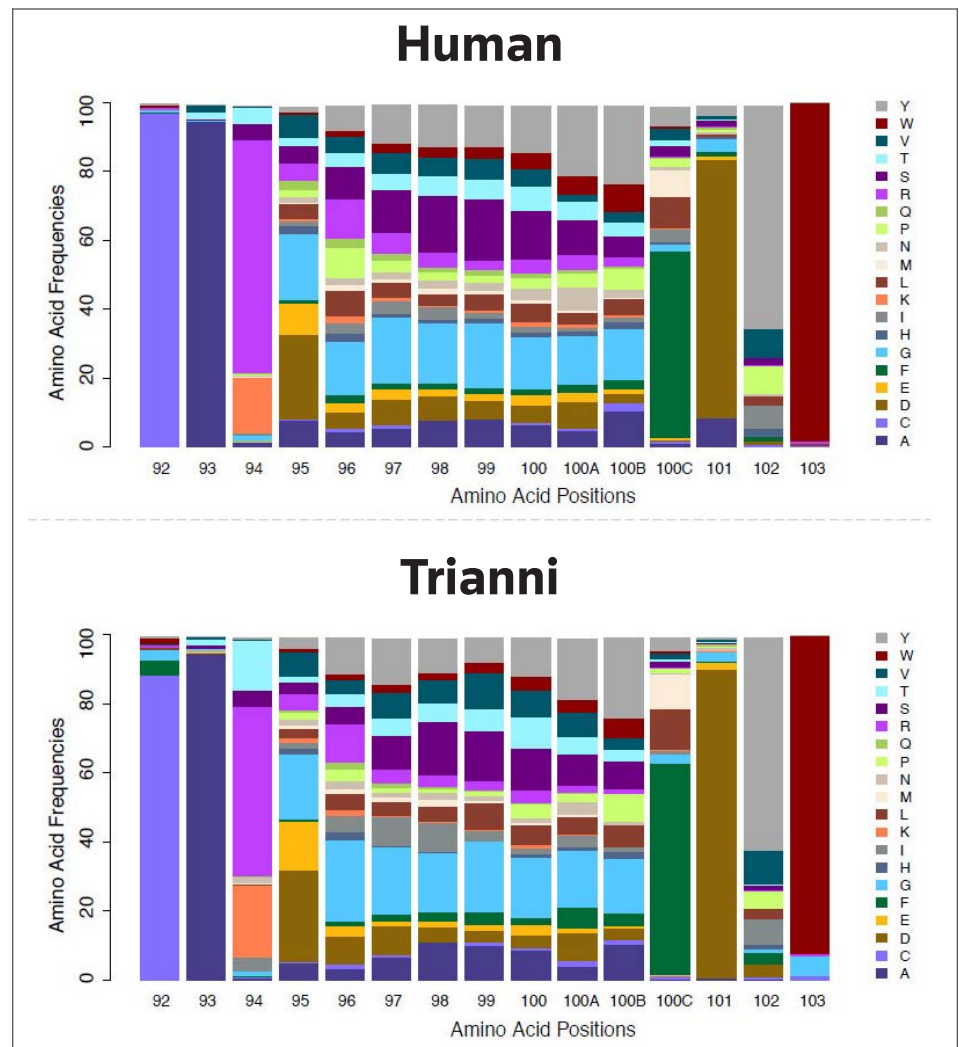
The founders of Trianni recognized the growing importance of therapeutic mAbs in the biologic drug market, and the importance of transgenic mice to their development. The booming business – on track to shoot past \$100 billion in the next few years – needed better mouse technology, without the drawbacks of first- and next-generation versions including that:

- They're significantly immunocompromised compared to wild-type mice, and can't mount robust immune responses to target antigens.
- Most contain just a subset of the total human genetic antibody heavy- and light-chain complement, limiting the theoretical diversity of antibody sequences they can produce.
- They're suboptimal in other ways.

So Trianni scientists got to work. The Trianni Mouse is the solution with none of those problems. It carries a complete human antibody repertoire including heavy, kappa and lambda loci, and it's designed in silico to generate optimized human antibody responses.

- Mouse exons of the V gene segments are replaced by human exons, but regulatory and other elements remain of murine origin.
- The corresponding V gene segments are chimeric, while V regions of expressed antibodies are entirely human.

That's exceptional news for researchers looking at mAb-based therapeutics in endocrinology, infectious diseases, oncology, ophthalmology, respiratory medicine and rheumatology, among others. There's a clear trend favoring transgenic mice, and it's likely they'll be the platform for the majority of marketed antibody products in the next decade or so. Trianni is ready, now, with the best version.



THANK YOU, DRS. KÖHLER & LONBERG

Monoclonal antibodies are simply antigen-tracking proteins cloned from a single parent cell. Their appeal lies both in their capacity to engage antigens in a highly discriminating fashion and in their ability to marshal the full might of the immune system in doing so. And they're now the most successful biological therapeutics – to the tune of \$125 billion a year by 2020. Scores have been approved for use in humans.

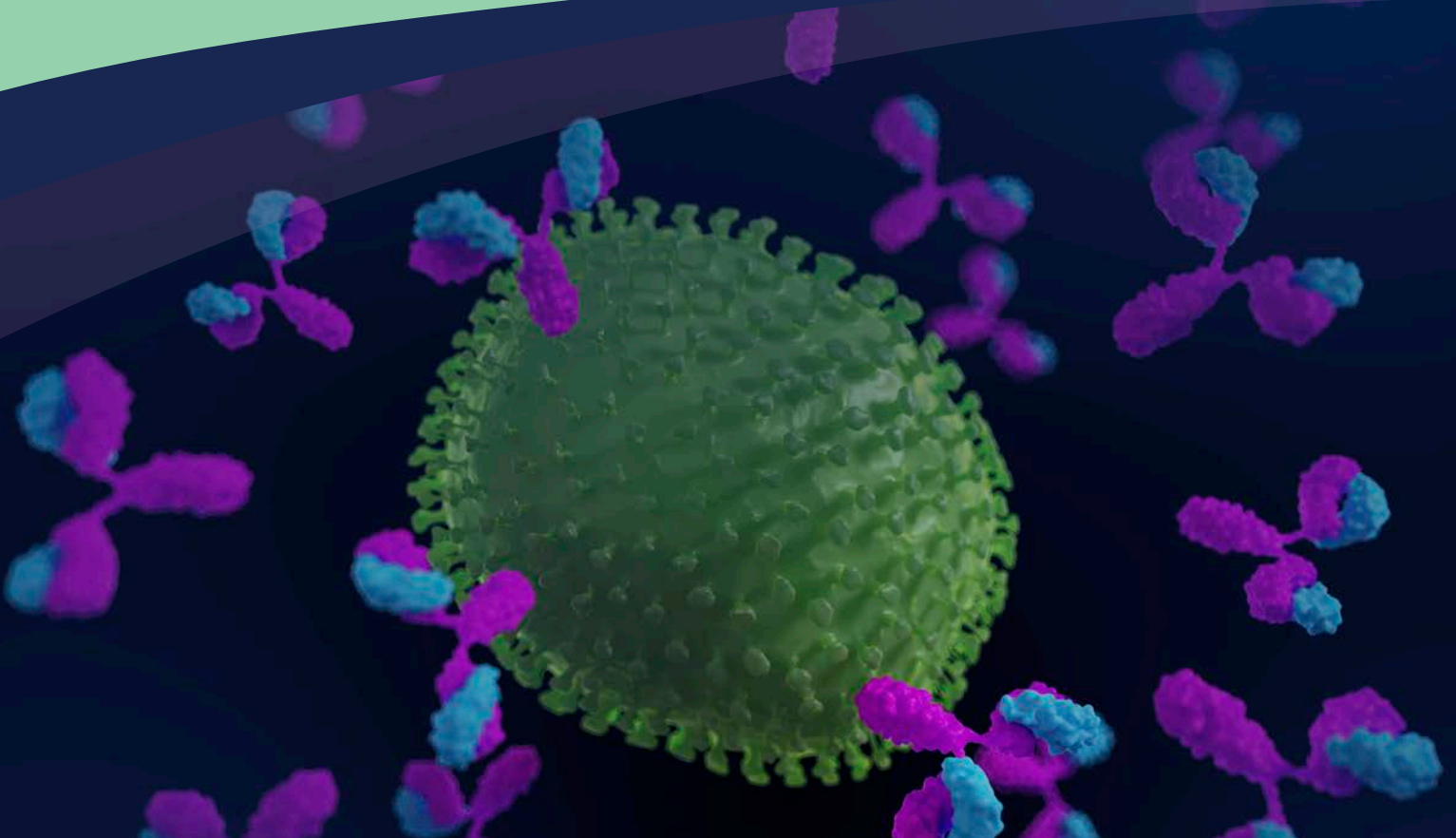
Georges Köhler deserves a tip of the hat, as one of the winners of a 1984 Nobel Prize “for work on the production of monoclonal antibodies.” Soon mAbs were widely used as diagnostics and laboratory reagents of exquisite specificity – but Köhler also thought they could be used as therapeutics. That requires humanization, though, as mouse antibodies are rejected by humans.

So Nils Lonberg and others started developing mouse strains that could express human mAbs. Early versions were difficult to produce and had very limited antibody repertoires, but advancing recombinant DNA techniques soon made upgrades easier and more precise.

Now, transgenic mice have become the key platform for discovering fully human mAb-based therapeutics. And because Trianni scientists developed a new and different way to replace mouse immunoglobulin V gene exons with their human counterparts, The Trianni Mouse makes mAb binding domains just like people do. That's a high-end solution for anyone eager to cure a disease.

**The Trianni
Mouse makes
mAb binding
domains just
like people do.**

TRIANNI



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