Daniel Palmacci â?? Head and President, Specialized Modalities, Lonza

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Daniel Palmacci, Head of Specialized Modalities at Lonza, combines entrepreneurial vision with deep technical expertise in advanced therapeutics manufacturing. With experience spanning chemical engineering, international operations, and biotechnology development across Europe, the Americas, and Asia, he has played a pivotal role in transforming laboratory discoveries into commercial treatments. In this interview, Palmacci discusses the maturation of the cell and gene therapy sector, the complexities of scaling revolutionary medicines, and Lonzaâ??s strategic approach to enabling next-generation healthcare solutions.

Could you walk us through your career trajectory and how you shifted into this new space?

My background is rooted in chemical engineering, which I studied in Berlin during the historic period when the wall came down. This early exposure to transformative change perhaps foreshadowed my career path. I began in technical operations with international projects, initially in Brazil, focusing on site operations, technology transfer, and translating scientific vision into manufacturing reality.

The pivotal moment came in the early 2000s when I was tasked with establishing biotechnology operations in Seattle, including a technology transfer from Amgen. This involved acquiring land,

constructing facilities, and scaling operations from the ground up. It was my first real encounter with entrepreneurship within a larger corporate structure â?? a theme that has defined my career trajectory.

Subsequent roles took me through the Bay Areaâ??s innovation ecosystem, back to Europe for Sandozâ??s biosimilar ventures, and eventually to Novartis where I gained exposure to the CDMO landscape from the client perspective. After leading multi-site ramp-ups at Merck and product launches at Morphosys, I joined Lonza in 2022. The opportunity to democratize access to transformative cell and gene therapies through robust manufacturing platforms was compelling.

Your responsibilities recently evolved from cell and gene therapy to specialized modalities. What strategic rationale underpins this change?

The simplified and streamlined operating model reflects our broadened scope and collaborative approach to supporting diverse therapeutic modalities. Rather than maintaining separate silos, we have consolidated our capabilities into integrated technology platforms. Specialized Modalities encompasses traditional cell and gene therapy alongside personalized medicine, mRNA therapeutics, microbial platforms and bioscience technologies.

This structural evolution recognizes that many of these modalities share common manufacturing challenges and regulatory pathways. By consolidating expertise, we can leverage synergies and provide more comprehensive support to our partners across their development journey.

The cell and gene therapy sector experienced significant boom between the years of 2017 and 2018, followed by a period of recalibration. How do you assess this evolution?

This pattern is characteristic of emerging technologies with transformative potential. We observed similar trajectories with the rise of the internet, biotechnology, and now artificial intelligence. Initial enthusiasm attracts widespread investment, but not all of it is deployed optimally or addresses genuine patient needs.

The subsequent recalibration phase, whilst sometimes characterized as a setback, actually represents a maturation process. It filters out less viable approaches whilst strengthening those with genuine therapeutic value. The companies and technologies surviving this scrutiny demonstrate more robust scientific foundations and clearer paths to commercial viability. This consolidation has ultimately elevated the quality of innovation we encounter.

How has this market evolution affected your client base and partnership approach?

The heightened scrutiny has raised the bar for venture capital investment, requiring companies to demonstrate more rigorous scientific validation and clearer commercial pathways. Whilst this initially reduced deal flow, we now observe higher-quality opportunities with stronger scientific foundations.

This evolution aligns well with our strategic approach. Rather than competing solely on price, we emphasize our ability to derisk development programmes through scientific expertise, regulatory knowledge, and manufacturing excellence.

Can you elaborate on Lonzaâ??s approach to supporting early-stage cell and gene therapy development?

At the heart of our approach lies an unwavering commitment to scientific excellence. We have built our business model around attracting top scientific talent â?? the kind of minds that typically drive innovation in smaller biotech firms. This strategic focus on fundamental science allows us to engage at every stage of the development process with genuine technical authority.

Our teams represent this dual capability perfectly â?? combining seasoned manufacturing experts with scientists possessing deep CMC (Chemistry, Manufacturing and Controls) expertise. Many of our technical staff could seamlessly transition into development roles at innovator companies, such is the depth of their scientific understanding. This unique composition enables us to partner effectively from early-stage development through to commercialisation â?? a critical capability for the advanced therapies we work with.

Our track record speaks to this approach. We were among the first to commercialise induced pluripotent stem cells (iPSCs). In CRISPR-Cas9 gene editing â?? a Nobel Prize-winning technology â?? weâ??ve achieved commercial implementation at a scale unmatched in the industry. Our leadership extends to autologous cell therapies, where weâ??ve guided partners from discovery through to approved products, while also advancing allogeneic and viral vector platforms.

What sets us apart is our systematic approach to platform development. Rather than simply accumulating disparate technologies, we focus on creating standardised, scalable systems for medicines that need these solutions. This disciplined methodology accelerates time-to-market while controlling costs and ensuring robust product quality â?? objectives that sit at the very core of our mission.

How do you tailor your approach for smaller biotechnology companies versus larger pharmaceutical partners?

Smaller companies require rapid progression to key milestones without depleting limited capital reserves. They need partners who can provide strategic guidance on navigating regulatory requirements, optimizing manufacturing processes, and preparing for commercial scale-up.

Our approach involves providing comprehensive packages that address immediate needs while establishing clear pathways to commercial manufacturing. This includes regulatory strategy development, quality system implementation, and economic modeling to ensure long-term viability.

The presence of Lonzaâ??s infrastructure and expertise can enhance a companyâ??s attractiveness to investors and potential acquirers. Our 127-year heritage reflects more than longevity. It signals operational depth, scientific resilience, and trusted systems â?? and for biotech companies, it matters to have a partner built to go the distance.

What does industrialization look like practically for these advanced therapies?

Industrialization requires establishing robust, reproducible processes supported by comprehensive quality systems and regulatory frameworks. This involves developing platform-based approaches that consistently deliver therapeutic-grade products while meeting stringent regulatory requirements.

Key elements include comprehensive data packages generated through validated processes, cost structures that support commercial viability and reimbursement, and regulatory expertise to navigate global approval pathways. Our three commercial cell and gene therapy (CGT) facilities undergo regular inspections, providing real-world regulatory intelligence that benefits all partners.

At the same time, weâ??ve seen that real supply chain security depends on transparent relationships, not just redundancy. As global tensions and regulatory shifts intensify, our partners increasingly value our ability to anticipate disruptions and co-develop resilient solutions.

Finally, we partner closely with innovators to help them incorporate scalability and plan for industrialization at an early stage. This includes proactive process development planning, automation strategies and raw materials considerations, and early engagement with regulators. Industrialization is more than just a technical exercise or operating at scale. Itâ??s about building a strong foundation for clinical and commercial success, starting from day one.

How do you maintain technological leadership given the rapid pace of innovation in this space?

In CGT, the line between innovator and CDMO is blurred. We invest significantly in internal R&D and process development capabilities, ensuring we remain at the forefront of technological advancement in a rapidly evolving marketplace. This includes cultivating strategic partnerships with innovative platform companies, automation specialists, and AI developers.

Active participation in scientific conferences and engagement with academic institutions ensures continuous learning and early exposure to emerging technologies. This combination of internal development and external collaboration maintains our competitive edge.

What are the primary obstacles facing early-stage developers in this sector?

Capital availability remains the fundamental constraint, particularly during periods of market uncertainty. However, equally important is the translation of promising laboratory results into manufacturable, commercially viable products.

Many companies underestimate the complexities of scaling CGT. Unlike traditional pharmaceuticals, these are living systems requiring specialized expertise in process development, quality control, and regulatory strategy. Our role is to bridge this gap, ensuring scientific innovation translates into accessible patient treatments.

You have highlighted the 400 percent growth in cell and gene job postings. How does Lonza address workforce development challenges?

Talent development is critical given the specialized nature of our work. We have implemented comprehensive programmes spanning recruitment, onboarding, continuous development, and leadership cultivation. This includes both technical training and leadership development to ensure knowledge transfer to future generations.

Our global presence allows us to tap into diverse talent pools while providing career advancement opportunities across multiple locations and therapeutic areas. The breadth of our platform â?? from

diabetes treatments to sickle cell disease therapies â?? offers scientists exposure to multiple cutting-edge technologies within a single organization.

We also focus on cross-training and knowledge transfer across modalities, helping our workforce stay agile as therapeutic technologies evolve.

How do you compete with regions offering different labour cost structures and working patterns?

Our global footprint allows us to establish operations that best serve client needs and market requirements. We operate across Asia, the Americas, and Europe, providing flexibility to optimize cost structures and market access.

Rather than competing solely on labour costs, we emphasize efficiency, quality, and innovation. Our investment in automation, lean manufacturing principles, and collaborative work environments enables high productivity whilst maintaining work-life balance standards that attract top talent.

Can you discuss your technology platforms, including automation systems like the Cocoon Â® Platform?

What distinguishes our approach is the ability to tailor not just our technologies to cell and gene therapy, but to adapt our entire ecosystem to client needs. Take the CocoonÂ® Platform: while it represents a breakthrough in automated cell therapy production, its true value lies in being part of an integrated capability. This extends to our electroporation systems and even our in-house media and buffer production.

We maintain these capabilities internally for strategic reasons: proximity enables deeper process understanding and more responsive optimisation. This vertical integration allows us to co-develop economically viable solutions with partners while maintaining rigorous quality standards.

Interestingly, several of these components have evolved into standalone business lines. Our media formulations, for instance, are now leveraged by external clients, which is a testament to their quality. This bidirectional value creation is fundamental to our model: as a CDMO, we simultaneously refine our offerings through client partnerships while commercialising components that address broader industry needs.

The result is a unique position where platform technologies like the CocoonÂ® Platform deliver immediate automation benefits, while our integrated approach creates compounding value across the development lifecycle.

Where do you see the greatest automation opportunities in cell and gene therapy manufacturing?

CGT manufacturing currently resembles biotechnology from thirty years ago: highly manual processes requiring significant human intervention. Traditional biotech manufacturing now operates with minimal human presence through extensive automation.

Our objective is to achieve a similar transformation for CGT manufacturing, driven not by profit optimization but by the need to achieve cost structures that support global patient access and reimbursement viability. This transformation is essential for democratizing these life-saving therapies.

How do you approach global manufacturing site selection and development?

We establish operations wherever patient needs and market dynamics require local presence. Our willingness to pioneer new markets, combined with substantial capital allocation capabilities, enables rapid facility development globally.

The mRNA vaccine experience demonstrated our execution capabilities, achieving commercial production within eight months of contract signature. This agility, supported by global expertise and financial resources, allows us to respond rapidly to emerging opportunities.

Has the pharmaceutical industryâ??s perspective on manufacturingâ??s strategic importance evolved?

Historically, manufacturing was viewed as a commodity function â?? necessary but secondary to research and commercial activities. Advanced therapies have fundamentally altered this dynamic. Unlike traditional pharmaceuticals, cell and gene therapies are inseparable from their manufacturing processes.

This has elevated manufacturing and CMC development to strategic functions requiring early integration into development planning. We are witnessing a new era where manufacturing excellence directly determines therapeutic success, positioning our capabilities at the center of healthcare innovation.

Which emerging technologies most excite you for future development?

Each modality we work with retains significant untapped potential. Cell therapy requires a transition from autologous to allogeneic approaches to achieve economic accessibility. iPSC technology is demonstrating remarkable clinical promise after decades of development. Viral vectors are proving their commercial viability, whilst exosome and mRNA platforms offer unprecedented therapeutic possibilities.

Rather than predicting which technology will dominate, we are positioning ourselves to support the advancement of all promising approaches. The diversity of our portfolio ensures we can adapt to whatever therapeutic breakthroughs emerge.

How do you maintain motivation and drive innovation within your organization?

Connection to patient impact provides powerful motivation. Regular engagement with patient communities and clinical outcomes reminds our teams of the real-world significance of our work. Many employees have personal connections to the diseases we are helping to address.

We also maintain structured innovation sessions and think tanks to explore emerging opportunities and maintain intellectual curiosity. The inherent appeal of working across multiple cutting-edge technologies attracts naturally curious individuals who thrive in dynamic environments.

What message would you share with potential partners considering collaboration with Lonza?

At Lonza, we are deeply passionate about our partnersâ?? success. We recognize that each therapeutic innovation is unique and are committed to tailoring our offerings to meet each partnerâ??s specific needs. Whether youâ??re in early discovery, scaling up, or preparing for commercialization, we collaborate closely with you to ensure that our solutions are not only scientifically robust but also economically viable.

Our partnership approach is built on mutual success and value creation. We understand that accelerating time to market is critical, and we leverage our extensive experience and innovative tools to streamline development phases. By identifying and mitigating potential pitfalls early in the process, we help drive down costs of goods sold (COGS) while maintaining the highest quality standards.

We welcome dialogue with innovators at any development stage. Our approach is partnership-oriented rather than transactional. We are invested in our partnersâ?? success because their therapeutic breakthroughs represent opportunities to improve patient lives globally. We have the expertise, infrastructure, and commitment to help translate innovation into accessible patient treatments. Weâ??re ready to advance the next generation of transformative therapies with you.

Do not hesitate to engage with us regardless of your programmeâ??s current maturity. We have the expertise, infrastructure, and commitment to help translate your innovation into accessible patient treatments. Weâ??re ready to advance the next generation of transformative therapies with you.

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