



FUNDING THE FUTURE

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# JOURNAL

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Guest columnist

# Investment in deep science

Gary Dushnitsky of the London Business School (LBS) considers the impact of corporate venture capital on innovation in the biotechnology sector

■ “What happened to the future?” demanded a blog by venture capital (VC) firm Founders Fund back in 2011, before summarising the impact of the venture-backed innovation ecosystem. “We wanted flying cars, instead we got 140 characters,” it read.

The blog touches on critical questions that continue to be asked four years on: how can we encourage deep-science innovation to enter our lives? Can society count on the VC model to provide the answer?

The life science sector is an apt petri dish in which to address these queries. Life-saving and commercially profitable drugs are based on innovations that are rooted in deep-science discoveries. Since the late 1970s, biotechnology start-ups have been the nexus of such drugs. Yet over the past decade, science-based biotech start-ups have found it difficult to attract capital from independent VCs.

Enter the corporate venture capital (CVC) arm. Nowadays, many of the pharmaceutical incumbents operate a dedicated VC fund that invests in and works with entrepreneurial companies. The 2011 investment patterns, for example, reflect the shift in investment sources. Two CVC arms (GlaxoSmithKline’s SR One and Novo Nordisk’s Novo A/S) are ranked among the top five early-stage investors by number of financing rounds, according to scientific journal *Nature Biotechnology*.

In recent academic publications\*, my co-author, Dr. Alvarez-Garrido, and I find that the shift in funding patterns is associated with advancement in deep-science innovation. Our research draws on the universe of US-based biotechnology companies that received investment from corporate and/or independent VCs from the 1980s onwards. The study accounts for scientific publications as well as patenting output, as both are

widely accepted indicators of knowledge creation yet differ in the legal commercialisation rights they afford.

Our analyses suggest that CVCs not only select innovative start-ups but also nurture them. We examined start-ups four years after they received their initial CVC funding, and find that half of all CVC-backed start-ups were innovation leaders, ranking in the top half of patenting and publications for their age cohort. In the innovation stakes, start-ups backed by CVC and VC syndicates outperformed VC-only backed peers, being twice as likely to move from a position of innovation laggard to leader. The comparison is between syndicates that include only independent VCs, and syndicates that include CVCs and independent VCs. So we do not find that CVCs outperform VCs per se.

The research indicates that the benefits to the start-ups are associated with preferential access to corporate advanced facilities, skilled R&D personnel and manufacturing and regulatory know-how. These resources are uniquely characteristic of venture capital funds that are part of large organisations.

The findings have implications for the future of deep-science innovation. And to the extent that the benefits associated with CVCs apply to other sectors where innovations are based on deep science, there may be substantial benefits for closer collaboration among the entrepreneurial start-ups, independent VCs and corporate investors. ■

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\*Alvarez Garrido, E. & G. Dushnitsky: ‘Publications and Patents in Corporate Venture Backed Biotech’, *Nature Biotechnology*, June 2013, Vol. 31: 495-497.