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ASIA EDITION

From Science to Scale, Taiwan Stakes Its Claim on the Exosome Economy

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On Day 2 of BIO Asia-Taiwan 2026, one room hosted a Nobel laureate on cell biology at nine in the morning and a cosmetics industry strategy session at three in the afternoon. Both were about exosomes. That is Taiwanâ??s opportunity and Taiwanâ??s problem, printed on a single dayâ??s schedule.



BIOSPECTRUM ASIA · DAY TWO ROUND-UP

Day 1 belonged to the plenaries and the press. Day 2 was when the exhibition doors opened, the roadshows started, and the event stopped talking about the industry and became it.

The second day of a five-day event is the honest one. The plenaries are done, the opening speeches have been made, and the theme on the backdrop has had its moment. What is left is the actual business: rooms with forty people in them arguing about multivesicular body fate, a roadshow running for two and a half hours without a break, lawyers explaining what a shelf offering is to founders who have never needed one, and a 2,200-booth exhibition floor opening its doors for the first time.

Day 2 of BIO Asia-Taiwan 2026 was unusually revealing, because if you moved between its rooms in the right order you could watch a country make a bet in real time. The bet is on extracellular vesicles. And the way Taiwan is placing it, in the same room, six hours apart, tells you almost everything about the opportunity and the risk.

The morning: a field arrives, in order

The Innovation Nexus of Extracellular Vesicles ran from nine until noon in Room 402AB of TaiNEX 1, and its co-organiser list is the first thing worth reading. National Taiwan University and China Medical University sit alongside the Taiwan Society for Extracellular Vesicles, the Taiwan Exosome Industry-Academia Alliance, the Taiwan Extracellular Vesicle Medical Development Association, the Industrial Technology Research Institute, the Taiwan Research-based Biopharmaceutical Manufacturers Association and the Taiwan Bio Industry Organization.

Count them. Three separate exosome-specific bodies, a national research institute, two universities and two industry associations, all co-organising one three-hour session. Countries do not accumulate that kind of institutional scaffolding by accident, and they do not build it for a field they are dabbling in. Before a single slide went up, the letterhead had already made an argument.

READ THE LETTERHEAD FIRST

A society, an industry-academia alliance and a medical development association, all dedicated to the same class of nanoparticle, in a country of 23 million people. That is not enthusiasm. That is industrial policy that has already happened.

The session was chaired open by **Han-Yi E. Chou (å?¨æ¶µæ?¡)**, president of the Taiwan Society for Extracellular Vesicles, followed immediately by **Ken Witwer**, president of the International Society for Extracellular Vesicles. The sequencing there is not ceremonial. Putting the head of the global society on stage within five minutes of the local one is a way of saying that what follows is not a regional showcase but a node in an international field, and that the standards being applied in this room are the field's standards rather than the host's.

The Nobel laureate, on video, doing the least glamorous job in the room

Randy Schekman of the University of California, Berkeley, who shared the 2013 Nobel Prize in Physiology or Medicine for work on the machinery regulating vesicle traffic, spoke by video on exosomes as an innovative topic in cell biology.

It is worth being precise about what a talk like this does at a session like this, because it is easy to mistake it for garnish. It is not. Schekman's laboratory is devoted to a molecular description of membrane assembly and vesicular traffic in eukaryotic cells, and the basic principles that emerged from that work in yeast are now being applied to genetic diseases of protein transport. For the past dozen years the lab has turned to the biochemistry of traffic in mammalian cells, including collagen secretion, autophagosome formation and unconventional secretion. Of particular clinical interest, it has focused on the mechanism of extracellular vesicle biogenesis, with an emphasis on how exosomes acquire a cell type-specific and highly sorted set of miRNAs.

That last clause is the entire commercial question of the exosome industry, stated as a research problem. Every therapeutic and cosmetic claim made about exosomes anywhere in the building on Day 2 depends on the answer to it. If you do not know how a cell decides which miRNAs go into which vesicle, you do not know what is in the product you are selling. Schekman's more recent interest, the unconventional secretion of alpha-synuclein, the protein implicated in Parkinson's Disease whose spread through the brain may itself be part of the pathology, sits at the other end of the same logic: vesicle traffic is not only a delivery opportunity, it is also a disease mechanism.

A field that puts its foundational cell biologist in the first slot is a field that knows exactly where its credibility comes from, and exactly where it could lose it.

WHY THE VIDEO TALK MATTERED

The choice to open with mechanism rather than application was the organisers making a statement about what kind of session this was going to be. It also, whether intentionally or not, set a bar that the afternoon in the same room would struggle to clear.

Taiwan's own mechanism, and Taiwan's own clinic

What followed was the local answer to the international frame, and it was a strong one.

Ruey-Hwa Chen (é?³ç??è•¯) of Academia Sinica presented work on how Bro-1 proteins control exosome biogenesis by regulating the degradation and secretion fate of multivesicular bodies. This is the sharp end of the same question Schekman had just posed. A multivesicular body reaches a fork: it can be routed to the lysosome for degradation, or it can fuse with the plasma membrane and release its intraluminal vesicles as exosomes. What governs that decision determines how many exosomes a cell makes and what they carry. Identifying protein-level control over that fork is not incremental. It is the kind of finding that makes exosome production engineerable rather than merely observable.

Yen-Nien Lin (æ??å®´å¹´) of China Medical University Hospital then moved the argument to the ward, presenting cardiac reparative effects of engineered exosomes in heart failure with reduced ejection fraction. Note the specificity. Not regenerative potential in general, but HFrEF, a defined indication with defined endpoints, using engineered rather than naive vesicles. That is what the field looks like when it has decided to grow up: a named disease, a named population, and

a product that has been deliberately built rather than harvested and hoped over.

THE PAIRING WAS THE POINT

Academia Sinica on the mechanism that governs how exosomes are made, then a hospital on engineered exosomes against a specific cardiac indication. Thirty minutes, and the audience has seen the whole translational chain compressed. Very few countries could staff those two slots domestically.

Three ways the field is widening

After the break the session opened out, and the three talks that followed mapped the three directions the field is currently travelling.

Andreas Moller of the Chinese University of Hong Kong took the longest post-break slot on extracellular vesicles in tumour biology and immunology. This is EV research at its most established and most complicated: vesicles as the medium through which tumours talk to their environment, prepare distant tissue, and manipulate immune response. It is also where the diagnostic money has historically been, because a vesicle shed by a tumour is a readable message if you can intercept it.

Ming-You Shie (è¬•æ??ä½?) of China Medical University presented targeted extracellular vesicle-mediated mRNA delivery to remodel neuroimmunomodulation and alleviate depressive-like behaviours. Read that title slowly, because it contains three of the most active ideas in the building at once: vesicles as a targeted delivery vehicle, mRNA as the cargo, and the central nervous system as the destination. Crossing into the brain is the delivery problem that has defeated most modalities. Doing it with an endogenous vesicle carrying a programmable payload, and aiming at depression rather than a rare monogenic target, is an ambitious combination.

Nai-Chen Cheng (é?ä¹?ç¦?) of National Taiwan University College of Medicine presented extracellular vesicles from three-dimensionally cultured adipose-derived stem cells and their potential in tissue regeneration. This is the pragmatic corner of the field, and it is where the manufacturing question lives. Adipose-derived stem cells are abundant and accessible; culturing them in 3D changes what their vesicles contain. It is also, notably, the talk that sits closest to the afternoon session downstairs in the same room, which we will come to.

Japan closes the science, and redraws the borders

Takahiro Ochiya (è•½è°·å•åº?) of Tokyo Medical University, one of the most consequential figures in Asian EV research, took the final substantive slot with an argument aimed squarely at the field's own vocabulary: beyond exosomes, redefining extracellular vesicles as next-generation therapeutics across species.

The word doing the work there is *beyond*. The field has spent a decade calling everything an exosome, when exosomes are one subtype of extracellular vesicle defined by a specific biogenesis route. That imprecision has consequences that are not merely academic. If you cannot say what your particle is, you cannot standardise it, you cannot make regulators comfortable with it, and you certainly cannot defend a claim about what it does. Ochiya's framing, taken with the across-species reach, was a call to grow the field's definitions to match its ambitions.

Tang-Long Shen (æ²?æ¹¯é¾?) of National Taiwan University closed with remarks titled vesicles without borders, on biological messages across kingdoms, a nicely chosen note on which to end a session that had spent three hours demonstrating that vesicle traffic is a universal biological grammar rather than a human curiosity.

The field spent a decade calling everything an exosome. It cannot afford a second decade of that, because you cannot regulate a noun that means whatever the seller needs it to mean.

OCHIYA'S CHALLENGE · BEYOND EXOSOMES

The afternoon: the same room, a different argument

At three o'clock, Room 402AB reopened with a session organised by the Taiwan Bio Industry Organization and co-organised by the Taiwan Exosome Industry-Academia Alliance and the Taiwan Research-based Biopharmaceutical Manufacturers Association. Its title, rendered from the Chinese, runs roughly as Taiwan's exosomes driving international markets: leading a new wave in the global medical cosmetics and regenerative medicine industries.

The programme was frankly commercial, and there is nothing wrong with that. The Taiwan Bio Industry Organization's vice chairman opened on the economic scale and global influence of Taiwan's exosome industry. The Taiwan Beauty Valley Industry Innovation Alliance followed on the new blue ocean visible for Taiwan's cosmetics industry when read against global supply chain demand. The Taichung City Cosmetics Industry Association spoke on exosomes driving a new generation of regenerative cosmetics, and on an autonomous strategy spanning raw materials, brand owners and manufacturers. A dermatologist from the Taiwan Laser and Photoelectric Medicine Association presented the clinical validation of exosome skincare from a dermatology perspective. A policy and vision slot was listed as provisional. The session closed with a briefing on applications to the Taiwan Exosome Industry Cluster Directory, and then networking.

WHAT THAT AFTERNOON ACTUALLY IS

A cluster directory, a supply chain read, a raw-material-to-brand strategy and a dermatological evidence session. This is a country assembling an export industry in public, with the trade bodies in the room and the paperwork on the table. It is competent, coordinated and unusually fast.

Taken on its own terms, the afternoon was impressive. Very few economies could convene the biotech association, the cosmetics manufacturers, the regional industry guild and the clinical dermatologists in one room and leave with a cluster directory that companies can actually apply to join. That is the machinery of industrial coordination that Taiwan built for electronics and is now pointing at biology. The instinct to move from science to supply chain quickly is exactly the instinct that made the island indispensable in another sector.

But the two sessions in Room 402AB on Day 2 were not describing the same product, and the schedule invites a comparison that the field should think carefully about.

THE TENSION One molecule, two credibility regimes

In the morning, a Nobel laureate explained that we are still working out how a cell decides which miRNAs to load into which vesicle. In the afternoon, in the same room, an industry alliance discussed brand strategy and raw material autonomy for exosome cosmetics, alongside a dermatology session on clinical validation.

Both of those things can be true and legitimate at once. Exosome-containing topical products exist, are sold at volume, and generate real revenue that can fund real research. The dermatology slot suggests the organisers know the evidence question is live and want it addressed rather than avoided, which is more than many markets bother with. And the presence of the cosmetics industry is a large part of why Taiwan has an exosome sector to convene at all.

The risk is one this industry has watched play out before, most recently in longevity. When a field's vocabulary is shared by a rigorous clinical enterprise and a consumer category with looser standards of proof, the consumer category sets the public meaning of the word, and the clinical enterprise pays the credibility tax. Ochiya's point in the morning, that the field needs to stop calling everything an exosome, is the technical version of the same warning. A regulator, an investor or a journal editor confronted with the word exosome now has to ask which of two industries is speaking.

Exosome is becoming a word that means one thing at nine in the morning and another thing at three in the afternoon. Ask any longevity company how that story ends.

THE TENSION · ONE ROOM, TWO VOCABULARIES

The constructive reading is that Taiwan is one of the few places where both conversations happen in the same building, with the same associations co-organising, which means the discipline of the morning has a route into the afternoon. The cluster directory is an instrument that could be used for exactly that: a directory with standards attached is a quality mechanism, and a directory without them is a mailing list. Which one it becomes is a decision, and it is being made now.

THE QUESTION WORTH PUTTING TO THE ORGANISERS

Will the Taiwan Exosome Industry Cluster Directory carry characterisation and evidence standards as a condition of entry, aligned to international society guidance? If yes, Taiwan has built a quality moat that the rest of the world will have to reckon with. If no, it has built a list.

The animal-free turn, in Room 402C

While the exosome community held 402AB, the room next door ran the day's other significant scientific argument. The Future of Drug Discovery, co-organised by LumiSTAR Biotech and Molecular Devices, ran from half past one until five and made a case that is quietly reshaping preclinical work everywhere: that human-relevant models have crossed from promise into practice.

The framing offered was that years of separate progress, in iPSC technology, organoids, 3D cell models, automated culture, high-throughput analysis and AI-enabled imaging, are converging into workflows that are integrated, reproducible and scalable. The rise of new approach methodologies and the 3R principles is therefore not only a policy signal. It is a reflection that the tools have reached the maturity the policy assumes.

That distinction matters more than it sounds. Regulators in several jurisdictions have signalled openness to reducing animal testing, and there is a persistent suspicion in the industry that policy has run ahead of capability. This session was an attempt to answer that suspicion with workflow rather than rhetoric.

Chang Yu-fen (å¼µé?•è?¬), chief executive of LumiSTAR Biotech, opened on redefining drug discovery through human iPSC-based 3D models as next-generation animal-free alternatives. **Dr Oksana Sirenko** of Molecular Devices followed on connecting high-throughput organoid workflows to actionable results through AI-driven automated cell culture and endpoint analysis, which is the least glamorous and most important talk of the afternoon: the bottleneck in organoid work has never been making one organoid, it has been making ten thousand of them reproducibly and reading them without a human squinting down a microscope.

After the break, **Wang Jui-ling (ç??ç??é?´)** of the National Biological Model Center (å??å®¶ç??ç?©æ¨¡å¼•ä¸å¿?) presented patient-derived xenograft organoid based drug screening for translational cancer research, and **Tsai Kun-chih (è?¡å•¤å¿?)** of Taipei Medical University's Graduate Institute of Clinical Medicine, who also directs its organoid technology core laboratory, closed on clinically relevant organoid models for oncology target discovery, drug development and validation.

WHY THIS SESSION PAIRS WITH THE MORNING

Both rooms were arguing that a technology becomes an industry only when it becomes reproducible. Exosomes need to know what is in the vesicle. Organoids need to make the same organoid twice. Underneath the two most fashionable words on Day 2 sits the same unfashionable requirement: standardisation.

There is a national-strategy read here too. A country with a state-funded biological model centre, a university-based organoid core laboratory, a domestic iPSC platform company and an international instrumentation partner can assemble a preclinical stack without importing it. For a region whose pharmaceutical ambitions are often described in terms of manufacturing capacity, owning the preclinical tooling is a more defensible position than owning the fill-finish line.

Crossing the Pacific, and the counter-current

In Room 504C, from half past one until half past five, Sullivan & Worcester ran a forum on United States capital markets opportunities for Taiwanese biotech companies. It deserves attention precisely because it complicates the story the rest of the week has been telling.

The week's thesis, stated in the theme and demonstrated by the country tracks, is that the world now comes to Asia. The Regional Collaboration Forum has Belgium, the Netherlands, Poland and Canada taking tracks in Taipei. Insilico Medicine, whose founder keynoted on Day 1, listed in Hong Kong rather than New York. And yet here was a four-hour session, with a full bench of American securities counsel, bankers and investor relations advisers, devoted to helping Taiwanese companies list in the United States.

Both things are true, and the honest version of this week's story has to hold them together. Capital may be relocating to Asia, but the deepest public markets for a clinical-stage biotech story are still largely elsewhere, and founders know it.

The programme was refreshingly unromantic. **David Danovitch** of Sullivan & Worcester opened on Taiwanese biotech and the US public markets, framed around opportunity, timing and market reality, and then moderated every panel that followed. The panels moved through IPOs and alternative listing pathways, with **Joseph Haughton** of Curvature Securities and **Maier Tarlow** of 3i Fund; then preparing for life as a public company, covering governance, readiness and execution for Taiwanese issuers, with **Jiayin Liao** of Sullivan & Worcester, **Flora Wong** of Conyers Dill & Pearman, **Vincent Fan** of Hall Chadwick and **Scott Gordon** of Core IR; then financing growth as a public company through shelf offerings, at-the-market programmes and PIPEs, with **Angela Gomes** of Sullivan & Worcester; and finally mergers and acquisitions from

the public company perspective, with **Joseph Segilia** and **Tehila Levi Lati** of Sullivan & Worcester and **Eddie Hsiung** of Lee and Li.

READ THE RUNNING ORDER

Only one of five panels was about getting listed. Four were about what happens afterwards: governance, readiness, dilution mechanics, and being acquired. That ratio is a warning delivered as an agenda. The IPO is the easy part.

The presence of shelf offerings, ATMs and PIPEs as a dedicated panel is the tell. Those are the instruments a small-cap biotech uses to stay alive between catalysts, and they are also the instruments through which retail-heavy small caps get diluted into irrelevance. A session that puts them in front of founders before they list, rather than after, is doing them a genuine service.

Four of the five panels were about life after the bell. Somebody in that room has watched this go wrong before and decided to say so out loud.

CROSSING THE PACIFIC · WHAT THE AGENDA ADMITS

The strategic question hanging over the room went unstated but was impossible to miss. A Taiwanese biotech founder in 2026 has a genuine choice of venue that did not exist a decade ago: Taipei, Hong Kong, or the United States. Insilico chose Hong Kong and made its capital structure part of its sustainability argument. This session existed because plenty of Taiwanese companies are still choosing New York, and the honest reading of Day 2 is that Asia has won the conversation but not yet the listing.

mRNA, and the meaning of a regional office

In Room 403, Moderna Taiwan co-organised a symposium on advancing the future of mRNA, running from two until five, framed around celebrating Taiwan's achievements in mRNA innovation and fostering scientific exchange across the ecosystem.

Wenchi Liu, general manager of Moderna Taiwan, opened, followed by **Dr Mi-Hua Tao**, executive director of the Nucleic Acid Therapeutics Program at Academia Sinica's Translational Medicine Research Center. **Gamal Elfetarany**, Moderna's region head of medical affairs, then took two consecutive slots, first on expanding the frontiers of mRNA medicines beyond vaccines and through the company's pipeline, and then on Taiwan's own mRNA achievements, before a panel with award recipients.

The obvious reading is that this is a corporate symposium, and it is. The more useful reading is what it says about where Moderna thinks the next decade of mRNA competence will live. A company does not put its regional medical affairs head on a stage for two consecutive slots in Taipei, alongside Academia Sinica, and hand out innovation awards to local researchers, unless it is cultivating something. Beyond vaccines is the operative phrase: the mRNA platform's future is in oncology, rare disease and protein replacement, and those require deep clinical and academic partnerships in the markets where the patients are.

THE PATTERN ACROSS THE DAY

Moderna with Academia Sinica on mRNA. Molecular Devices with a Taiwanese iPSC company on organoids. Sullivan & Worcester with Taiwanese issuers on US listings. Three multinationals, three different reasons to be in Taipei, none of them courtesy.

The floor opens, and the money starts moving

Day 2 was also the day the exhibition opened, running from today until 19 July across TaiNEX 1 and 2, with more than 2,200 booths expected and national pavilions and regional forums from over twenty countries. Last year the exhibition recorded over 140,000 visits against roughly 3,000 conference registrants, which is worth restating because it reframes what this event actually is. The conference is the part the industry reads about. The exhibition is the part the industry attends.

Downstairs, the Investment Summit moved into its second day with a structure that made no pretence about its purpose. A featured speech opened at nine, followed immediately by a roadshow block running until a quarter to twelve, and then a panel on building a successful MedTech venture. Two and a half hours of consecutive company presentations, with no

panel to break them up, is not a programming accident. It is a summit that has decided its job is transactions rather than discourse.

THE NUMBER TO WATCH THIS WEEK

International investor presence at the Investment Summit doubled in 2025. Whether it holds is the single most informative metric available, because exhibition footfall measures curiosity and investor attendance measures conviction.

Elsewhere on Day 2, **Alex Zhavoronkov** returned to the programme on the AI and Medicine panel, examining how AI reshapes the future of drug discovery, a day after his keynote argued that a longevity company survives by licensing the commercially legible work to fund the work no regulator will approve. It is a useful thread to pull through the day, because the exosome community in 402AB is standing at the same fork he described: a rigorous therapeutic ambition, and a consumer-facing revenue stream that could either fund it or discredit it.

DAY 2 The board, at a glance

TIME	Session and venue
09:00	The Innovation Nexus of Extracellular Vesicles, Room 402AB, TaiNEX 1. Schekman by video at 09:10; Academia Sinica, China Medical University Hospital, CUHK, NTU and Tokyo Medical University following.
09:00	Investment Summit B-2: featured speech, then a roadshow block to 11:45, closing on Build a Successful MedTech Venture.
13:30	The Future of Drug Discovery: iPSC organoids, AI-driven workflows and human-relevant models, Room 402C. LumiSTAR Biotech and Molecular Devices.
13:30	Crossing the Pacific: U.S. Capital Markets Opportunities for Taiwanese Biotech, Room 504C. Sullivan & Worcester, five panels to 17:30.
14:00	Advancing the Future of mRNA, Room 403. Moderna Taiwan with Academia Sinica.
15:00	Taiwan's exosomes driving international markets, Room 402AB. Taiwan Bio Industry Organization, closing on the Exosome Industry Cluster Directory.
All day	Exhibition opens across TaiNEX 1 and 2, running to 19 July.

THE TAKEAWAY

Day 2 made three things clear that Day 1's plenaries could only assert.

â?ª **Taiwan has a real extracellular vesicle sector, not an aspiration.** Three dedicated bodies, a national research institute, two universities and a cluster directory with an application process. The science on display was internationally credible, and the translational chain from Academia Sinica mechanism to hospital-grade engineered vesicles ran without a foreign name in it.

â?ª **The field's vocabulary is its biggest liability.** Ochiya said it in the morning in scientific terms and the afternoon demonstrated it in commercial ones. Whether the cluster directory carries evidence standards will decide which meaning of the word exosome wins in this market.

â?ª **Asia has won the conversation but not yet the listing.** A packed four-hour session on US capital markets, running while European countries hold tracks down the corridor, is the honest complication in this week's triumphal narrative.

If Day 1 was the argument, Day 2 was the evidence, and evidence is always messier. The most valuable thing about it was that nobody tried to tidy it up. The Nobel laureate and the cosmetics alliance were given the same room on the same day, and anyone who walked through both saw the whole picture: a country that has built something genuine, moving fast enough that its ambitions and its shortcuts are now sharing a calendar.

That is not a criticism. It is what a sector looks like at the moment it becomes an industry. The question Day 3 inherits is whether the discipline of the morning can hold the afternoon to its standards.

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