Trillions of Exosomes? Everybody Lies, Nobody Knows Transcript

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Podcast Introduction and Regenerative Medicine Overview

Hey there, welcome to the Recharged Biomedical Podcast. I'm Dr. Edward Park and if you're curious about regenerative medicine, you've come to The Right Place.

We're diving into the latest breakthroughs in telomerase activation, stem cell exosomes, and all the cutting edge science that's shaping the future of healing and longevity.

Let's get started. Hi everybody, Welcome to another episode of the recharged biomedical podcast. This is a provider edition focused on exo soaps. So by popular demand, we're going to discuss why you can't really compare brands of exosomes.

The punchline is everybody lies and nobody really knows. And if that's all you want to know, then you could leave the conference because nobody knows what do I mean by that?

Well, because there's no standards, there is no sheriff in town, people self-report their excess home counts. We don't know if they're verified. There's not universal standard, we'll attempt to describe one at the end.

Manufacturing varies a lot because it's a living process and marketing is way, way out front of the site.

Why Exosome Brands Can't Be Compared

So I've never met someone who's pitched me on the business side who understands even how to count these. So the reality is they'll say, well, we have twice as many.

We have 15 billion exosomes for half the price. You have no way of verifying that. And so we'll talk about what NTA is. nanoparticle tracking analysis.

Basically on the left you see these little hairy cylinders at the nanometer scale and this is how they filter out in usual cases. The old literature was centrifugation but that's kind of destructive.

So they have these pre-made little filters so you can very easily filter stuff too big. And that's called size exclusion, but there is no validation on the other end.

So it's kind of like the seventies match game show, like The Bachelorette is judging based on what they're saying, But she can't actually know whether Guy is the real guy or Stinky and Spike are what are being pitched to her.

Let's define what we're talking about with exosomes. So size matters. For over 100 years, they've seen these exostomes coming off from the surface, and for 80 of those years they decided it was poop.

But now that they analyze them, this is how the cells communicate. And it's interesting, I've been to two international conferences, the very best and brightest in exosomes, and I went to the stem cell conference last year.

And stem cells conferences even though they all agree and know that exostomes are how stem-cells communicate, they don't talk about it in 85% of their talks, which is interesting.

So when we talk about looking, we talked about exosomes that are always this size, between 30 and 160 nanometers. There's stuff that's bigger, there's that stuff smaller.

And so the theory behind exostome treatment is that we're going to exclude and include based on this narrow,

visible, phenomenological size of exocellular vesicles.

I was at the conference in Melbourne, I asked one of the professors, well, what's in the bigger ones, two, three, four, and unanimous with some of those successful brands sell.

And she said, Well, when we look at it, it's really kind of.

How Exosomes Are Defined and Measured

So it could be the same, but if you're talking about trying to work backwards from the premise that we want the active exosomes that are intentionally created, not just this burping and belching of themselves, let alone the apoptite bodies, which are big, disintegrated fragments of the cells, then we do the size exclusion, size inclusion for these little bubbles.

Clinical value of a bigger and smaller is unknown. So you can't see what you're actually selling. If you ever thaw a bottle and one of these brands is somewhat cloudy or opaque, you are above 200 nanometers.

What is 200 nm? 200nm is called Abby's limit of light. So because of physics, you can't see light cannot discern below 200 nanometers, which is where we're living at 330 to 160. So you need to use this NTA or this light scattering device.

Again, if you melt one of the competitors' vials, it'll be somewhat cloudy. That means as they report on their Nta analysis that their particles are bigger, Is bigger better?

I think it's like four three pi r cubed. Yeah, more volume more product, but is it the same? Might be according to the professor at the conference. But if you're trying to just limit what's intentionally created by that MSC or the other cell, you really going to do a size inclusion exclusion.

How does an NTA work? This is what everyone uses. They have a light. and it's scattered by particles that are invisible by definition and the amount of Brownian motion is measured and they infer based on that and a formula how many particles you got.

Now the problem is if you turn the sensitivity up or down you can go an order of magnitude or a thousand times more. So you could say sort of out of the corner of your mouth I'm selling so many trillions when in fact you and I both know it should be in 10 to the 9 or the billion range.

So how do you know just as an intellectual experiment if you have exosomes? Well, they're made with these trans or tetraspanins. I guess they cross the phospholipid bilayer.

They help with finding their named cell differentiation 9, 63, and 81. So this is a geeked out poster from the Chimera Labs wall where they paid money to buy these antibodies that light up three different colors and they go, oh my God, we have this.

Good for you. And so this proves that these are canonical or endosomally derived exosomes, right? And you can confirm that this was Western blotting and they should light up if you have exasomes.

Now I made this thing before going on a slide of a stew and the reason why I wanted to prove to you that identity is not content, right? So I asked this question, you know, Duncan's very parsimonious with his knowledge because he doesn't want me stealing his ideas, I guess, but he confirmed one thing today.

And then years ago I ask him, well, how do you what's in the exomes if you don't break them open? He said, Well, they have to break him open. which none of the other competitors probably do on a very frequent basis.

If we're being honest, exosomes are like these toy bubbles and I introduced a friend of mine to the company and they had this fight because my friend sent them to a lab and the lab found normal saline, which is what they should

find unless they pre-treat the melted exasome bile with soap.

Identity Markers, Cargo, and Whatu2019s Really Inside

There's different commercially available soaps, but if you have a soapy bubble and you don't crack open the bubble, you know what's inside them. And the lab will say, oh, You have nothing just normal saline.

So compared to this broth above, we have these toy supermarket bubbles, all these little prizes and stickers. That's our cargo that's going to do our actions that we want.

But just because you did a size exclusion, you might have all kinds of other bits that you could count as particles and then pretend like they're exosomes.

They're not. There could be bits of celery, potatoes, carrots, other schmutz, even we can say true excrement or destruction products. probably inert, mainly okay, but if you're doing strict, strict working backwards from what we want, which is the exosomes, then you got to do a size exclusion, you gotta do size inclusion, and then, send it to a lab or break open the bubbles and see what RNA is in there, basically.

So you do your RNAomics, your proteomics. You look at other things and you find out, hey, just as we predicted, these are the nodes being played. Now, a thing that nobody talks about, but everybody knows that cells are alive.

They're not like exosomes. You know, I go through TSA with exasomes and they say, well, where's your certificate? Because we're going to irradiate something that's living.

These are not living, they're frozen in our chance of DNA breakage is small. And again, there are no live exesomes are passive messages. A friend of mine compared them to, you know packages, which I agree with.

but they said the cells are the delivery trucks. Not really. I would say that the cell are musicians, and we'll go into that analogy. So from moment to moment, they can produce whatever songs you tell them to, or they want to or feel like doing.

The premise of this field is they stress them with low oxygen, simulating the environment that your natural exosomes, not FDA approved, do. You slice your finger, you sprain your ankle.

Inflammation brings in MSCs with secret exosomes and they try and reprogram the local cells to act younger. If you play music that's calming, maybe they're less productive.

If play death metal, they may be more productive, in fact at the presentation this week I was at they talked about photobiomodulation. You hit it with certain light that'll produce allegedly six times the more excess self.

So these are living things. With a life cycle, they get old. With cell passage, deteriorate with epigenetic silencing, with copying. So there are a lot of factors that play not just pH, CO2, sound temperature.

And so you have to be skilled at this. It's not something any schmuck can do easily. Then you isolate them and you test. There's going to be variability from every exosome to every cell of those 10 to 100 million cells that are producing it.

And so nobody really knows how much or what's in them. That's the sad truth.

Cell Culture Variability and Particle Count Claims

They do test every lot for safety or infection, not probably every lots for the omics, which is six figure up to seven expensive, but we do have an idea of what nodes are being played in that.

So again, back to the broth, these companies are selling particle counts. So why would they do that? Well, for

money. If I can dilute my stem cell broth and, you know, diluted out and just say, trust me, I've got more exosomes.

I may have particles, but, logic tells us that if you diluited by 10, You have one tenth the exo soaps and that's what they're doing. Cause they know that they alone are not going to count them.

You're not gonna count. And so it becomes an article of faith. And of course, the proof of quitting is in the eating. Maybe they're effective, maybe they are not.

I talked to a lot of doctors who left the brand I use, have come back. Some bias suggests that they love their brands. But I would say the majority of manufacturers are either white label, meaning they don't have any control over the production.

What are they made by small apps and again you and i could set up a lab tomorrow strip mall or kitchenette would it be a sterile what is high quality.

I don't know but over the course of weeks to months that product will definitely deteriorate so you just don' know what you're buying. In fact, Chimera themselves, the granddaddy who came to market 10 years ago, gave up.

They threw in a towel. 85% of their market was stolen by other good-looking people in suits, saying, we have four times as much for half the price. And what does the doctor know?

They don't know anything. They switched their nomenclature from billions to trillions, again, doing what, unfortunately, everybody else was doing. So they got tired of fighting that and they said, oh, we have trillons of particles too.

But if you really ask, the number is based upon a guesstimation. There was a famous stem cell scientist I saw lecture from Harvard doing stem cells in newborn preemies.

And she said, oh, we don't know how many exosomes there are, but in 2440 hours, this is what a million stem cells will make. So the particles we get is roughly that count.

We're all kind of inheriting this legacy science that's also when Chimera switched to trillions of particle count, I also got the numbers of what the exosomes were and so I for my own clinical notes use the standard original likely better guesstimate of billions of particles but this just came up in a patient consultation.

If we're talking cells it's millions, if we are talking exotomes it is billions, and if were talking particles it trillions and on up. Okay so if you're measuring debris and selling debris Mazel Tov more power to you but you are probably not selling exoesomes.

So what did Chimera do with this? Well, they kind of built the parachute on the way down. It was the urgent matter, but they had to invent something. So Duncan Ross, who founded as the chief of six PhDs there at the lab, he said, well, let's standardize it.

And the formula he came up with, it's kind like Boyle's ideal gas law is the standard unit of potency in his opinion was related to the amount of RNA.

Okay. That's the main payload. As we'll talk about. It's related to the volume and there's a conversion factor, RF. But it's basically more particles is good, that's the B, and then divided by total protein that standardizes it.

So that was his attempt to look at the relative potency of different lots and different competitors.

Potency, microRNA, and the Music Analogy

They knew that they were using the same nanosite, they're using only thing to rate to fluorescently label them for the markers that we talked about, the CD markers.

and they always test their product. So what did they find? The data didn't show that the competitors had as many X cross units. You look at this chart of animals above us, non-animals are the same size.

The histogram to my left shows that their products at the time same process had very much more, 60 times more of real potency when you look the amount of mRNA protein in it.

Much more protein, total apples and oranges situation. So I made this slide years ago and it kind of takes you through what music would be like if you had no ears.

So what is the top left? We see there's the house hamster, kidney, MSC, a PC3 cell. They have these micro RNA, which overlap somewhat, but like the musicians can play any notes they want.

In the middle, we see these targeted pathways as irreducibly and emotionally complex. Even AI struggles to understand it. There's a paper above, microRNA regulatory labs get MSC-derived exosomes.

Anytime you look, you break open the MSD exasomes, there's bunch of notes that can be played. So you'd be really engaged in active hubris if you said you understood what was going on.

Again, another predicted biological process chart on the left, and here's the notes, AI-generated come out of Igor Stravinsky's whatever song this doesn't tell you anything it's how the notes are played in sequence in context and but what we can understand is right above me microRNA are these 22 to 24 base pair blockers so they go in and they gum up the mRNA So let's say you have an mRNA that keeps you from acting immature, you know, picking your nose, farting in public.

So this goes to the local stem cells and it blocks that for a short time. Those de-differentiation blockers that are tonically or constantly on are transiently blocked.

The local, even exhausted, old worn out stem cell can pretend to be young and regenerate. That's the premise, I think, of how everything works. Of course, I am just guessing.

I'm not a scientist, so I wrote this book as some songs appealing and the core analogy is that stem cells like all cells and plants and animals are musicians.

They can play a lot of different notes. There's a whole lot we don't know. We like to say we know, we do not know and as far as counting, everyone lies because they can't actually count them.

And so if you'd like to learn how to use what I think is a very powerful regenerative tool, you can take my class. It's for providers. We go through topics like, will this work?

How do I stay out of trouble? What do we charge? When to you use ultrasound? All the different areas like hips, knees, shoulders. I have demonstration videos.

So I want sheets for your medical assistant to prepare the supplies to be able to do the steps. Watch the video over and over again, how do you do it?

And we have forums to download for consent, for aftercare, and we've all that. It's like a turnkey course for you. Start with your friends and family, with yourself.

And I think you'll find very, very interesting, fun, also good for your bottom line. The course is at rechargebymedical.com slash master class. Every dollar is returned to you as purchase credit that doesn't expire.

Clinical Course, Q&A, and Closing Promotion

With that, I will end and will answer any questions anybody might have. I know it's disappointing, but that's the truth as I see it. Richard Dennett. Hi, Dennette.

Bill Clinton, not the president. Will you discuss the differences in efficacy in submucosal exomes versus the direct device? That's a good one. I am not a scientist per se, but if you figure you're trying to get to the brain through the olfactory nerves, through this submucosa, it's just logic would dictate that you get a higher percentage.

If you inject it, you don't have to be absorbed through mucosal, right? Nevertheless, the rat studies, clinical experience show that because of the scale of 100 nanometers, they get up there through whatever nooks and crannies.

So DART is effective, and certainly we just added the autism module. And so little kids with autism and dysregulation are not going to tolerate any kind of injection.

So yeah, that's the bottom line. It probably is a higher dose from subucosal injection, if they can tolerate it, then great. Good question. Any other questions?

Thanks for adding Armin's modules. Yeah, I know he did a great job. He took such a deep dive really to the biochemical level that was beyond even. So he took what I was teaching and learning and just expanded it.

It's a brilliant, brilliant three section addition to the course. The course will just teach you if you just want to treat ankles, knees, hips, your basic questions.

So really good turnkey, evergreen, always there, can refer back to it, I think it's pretty good value. Some people casting shade at the conference this week or last week, you're like, why is it so cheap?

I guess I should raise the price. Okay, everybody. Thanks for your time. Appreciate you coming. And we're going to post every broadcast of this edited down and I hope everyone has a great Thursday evening afternoon.

Bye bye. Many clinicians are getting interested in exosome therapy and they hesitate for good reason. Questions like, does this work? What forms do I need?

How much should I charge? how do i stay out of trouble? All these questions are addressed in my online course. That's why I created it to help you get started.

The online course is your permanent turnkey resource to get started either treating yourself, friends and family, or to expand your practice and help more people, as well as increase your revenue.

Thanks for tuning into the Recharge Biomedical Podcast. If today's episode got you thinking, you'll love my book, Exosomes, Songs of Healing. It's packed with cool analogies, full color illustrations, and all the science you need to understand how exosome are changing the game in aging and regenerative medicine.

You can grab it in paperback, ebook, or audiobook, whatever works for you. Now head over to www.rechargebiomechanical.com to check it out. And don't forget to like and subscribe so you never miss another episode.

See you next time.