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What we can learn from a revolutionary herd of... Alpacas?



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If this pandemic experience has taught me one thing, it is that the world doesn't stop moving for anyone or anything. Forced into stillness by nature, I reluctantly watched as the majority of the year spent in quarantine spotlighted the holes and ugly truths within today's society.

It would be only natural to buckle under the weight of the climate crisis + racial injustices + systemic oppression + COVID19. Not to mention juggling life's other demanding tasks such as financial burdens, job insecurity, taking care of loved ones, dealing with crippling diseases, and so on.

Understandably overwhelming at first glance we have a lot of work to do in the repair aspect. **But the world in which we can, need, and must live in is still possible. It simply involves adapting to change and reimagining a future that is not only empowering and uplifting to all human beings but in alignment with the environment we inhabit.**

This shift that our species must endure does not have to be a painful, grueling process and one which we pursue with fear; rather, we can embrace change with linked arms and embody the adaptable and intelligent beings we claim ourselves to be.

It is my greatest wish that in response to the global crises that unite our species, cohesion among like human beings will grow and overthrow the values that control our world today. Thus far, the principles which are associated with wealth and success harbor at their cores: fear-based incentives, authoritarian leadership, militaristic organizing tactics, scarcity mindset, and competitive working environments. **What if we replaced those ideals with more wholesome and holistic standards: respect for biodiversity and all life forms, innovative and inspiring technology, sustainable growth, community-centered decision making, diverse and feminine leadership, and overall care for the human spirit?**

To some, this transformational shift of our culture may sound

senseless, impractical even, but these solutions that will shape the world we wish to live in are happening as we speak. And as some understand more clearly than others the Hail-Mary state our world is in, no method of success should be overlooked. This includes merging the worlds of research and agriculture with the common goal in mind of helping families burdened with disease.





(Left: Dr. Brian Wadzinski | Right: Randy Litton)

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The marriage of these ineligible fields spawned the creation of the Turkey Creek Biotechnology LLC – an excellent demonstration of what collaborative innovation looks like. But, as is true to all great achievements, there also lies a great deal of struggle. The origins of this business novelty first begin with a frustrated researcher.

Dr. Brian Wadzinski, Associate Professor of Pharmacology at Vanderbilt University, encountered difficulty securing funding for his research 5–6 years ago. Having worked off and on with various companies to develop antibodies for their research program, Dr. Wadzinski needed a more sustainable method to support his research in cell signaling.

The professor explored the idea of starting his own company where he could access the animals and generate antibodies on his own accord. Rather than the traditional mouse and rabbit models, Wadzinski was set on pursuing a partnership with alpacas.

But, why alpacas? The answer requires a deeper dive into the anatomy of these furry creatures. Members of the animal family camelid, alpacas share their likeness with llamas and camels. These species have recently proven to be quintessential in targeted antibody therapy research. Incorporating camelids into molecular cell research is a fairly recent method, and proving to have striking success. In 2018 the first llama-derived drug Caplacizumab gained FDA approval to assist in treating a blood clotting disorder.





Unbeknownst to these herd animals, the success is found in their vital fluids. Alpacas naturally produce two types of antibodies within their immune system. One is the conventional antibody, the same as those found in humans. The second and more desirable antibody fragment constitutes one-tenth the size of human antibodies. This small antibody is advantageous to researchers due to its ability to bind with proteins that the larger, conventional antibodies cannot. In short, alpacas make the perfect specimens for examining diseases affecting neurological development.

That being said, Wadzinski's colleague at Vanderbilt, Dr. Ben Spiller joined his ventures and together they founded Turkey Creek Biotechnology. Provided with a promising solution, Wadzinski had finally obtained the freedom and security to advance his research on the target gene, PPP2R5D.

In attempts to simplify molecular cell-speak to a few sentences, the gene PPP2R5D is found naturally within us humans. It is involved in the development and function of the brain, coding for an enzyme that is paramount to the development of neurological pathways. However, if mutated during stages of its development, this gene can cause Jordan's Syndrome, a relatively rare

neurodevelopmental disorder that is characterized by learning disabilities, muscle weakness, language impairments, and autism-like behaviors. At that, PPP2R5D has also been linked to Alzheimer's disease and certain cancers.



(Dr. Brian Wadzinski & Jordan, who Jordan's Syndrome was named after)

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Dr. Wadzinski's goal in studying this gene is to understand more about its nature and pave the way for the future development of treatments. He notes the potential of harvesting camelid antibodies to finding answers about these perplexing illnesses, "One can use them for research, diagnostics, and more recently for therapeutic purposes."

With the research aspect of the business secured, Dr. Wadzinski works on the next piece of the puzzle – finding a home for the alpacas. To obtain healthy, effective antibody samples, the herd of alpacas needs to have ideal living conditions. That being said, the bustling metropolis where Vanderbilt University is located lacks the rolling hills and vast spaces alpacas thrive on. So, Turkey Creek Biotechnology expanded its reach 100 miles west of Nashville, to the humble countryside in Waverly, Tennessee.



Here, Dr. Wadzinski partnered with Randy Litton of Litton Farms, who agreed to adopt the herd of alpacas onto his 300-acre farmland. Randy has been harvesting and selling Bermuda Hay bales on his farm for years. He took an interest, or rather a moral obligation, in Dr. Wadzinski's project, wanting to play a role in helping families stricken with diseases such as cancer.

Randy's connection to the issue at hand is not founded on a contract or monetary gains. Instead, he is invested in Turkey Creek Biotechnology because of his compassion for those in a similar situation he found himself burdened with once before. Randy's son, Gunnery Sergeant Edwin M. Litton, and recipient of the Navy and Marine Corps Commendation Medal was on active duty when he was exposed to carcinogens. He later developed cancer in his esophagus, bones, brain, and lungs, and battled the debilitation from these illnesses with strength and courage up to his final breath. **In a simple manner, Randy explains his reason for joining Wadzinski's business, "If someone else can be spared the emotional pain of death from disease, it is worth the research effort."**

Despite differing motives, the farmer and scientists find common ground in their devotion to preserving human life. Dr. Wadzinski expresses his appreciation of this innovative coalition,

“I think one of the beautiful things about what we’ve been doing is it’s allowed us to engage three different groups of people – a group of scientists here at Vanderbilt, a group of farmers in rural Tennessee, and the families who have children that are afflicted with this Jordan’s Syndrome.”



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To add to the uniqueness of this collaborative business model,

they partnered with New Era Fiber, an alpaca fiber processing company in Nashville, Tennessee. The company agreed to process the alpaca yarn from Litton Farms at a reduced price, allowing Dr. Wadzinski and colleagues to transform the alpaca's desired fiber into functional yarn.

The fleece was then distributed to a group of volunteers who knitted hypoallergenic hats for the patients undergoing chemotherapy treatment at Vanderbilt Hospital.



From the antibodies produced by the alpacas and harvested by

the scientists to the hats knitted by volunteers and providing warmth for chemo patients, this approach is full-circle. Combating diseases such as Jordan's Syndrome, Alzheimer's, or cancer does not have a single, straightforward answer. **But one thing is clear, to embrace a future that makes room for all human beings cooperation and adaptability must replace competition and immobility.**

This story paints the picture of a scientist who ventured out of his lab to join hands – and hooves – with other community members in a collective attack against the diseases plaguing our society. By allowing room for tactics and space for compassion, the perspective of the issue at hand is broadened into a realistic, all-encompassing picture. Joining different voices in the community on shared burdens opens the door to an inclusive, collective approach to problem-solving.

Instead of trying to reinvent the wheel and compete to monopolize, the professor welcomed the collaboration. Rather than working against to get ahead, he worked *with* to impact *more*.

Adrienne Maree Brown, defines the title of her work, Emergent Strategies as a manner in which “**we intentionally change in ways that grow our capacity to embody the just and liberated worlds we long for.**” Not only can the Turkey Creek

Biotechnology business model inspire, we can also reflect on its approach and impact when discussing how our societies will triumph in the face of adversity.

Imagination is the tool at the disposal of our creative selves, enabling us to dream of a better world. For the world to change for the better, we need dreamers to come up with ideas, solutions, and collectives that are novel and inspiring. And if we are lucky, those ideas will include more cuddly creatures like the alpacas at Litton Farms.

I will leave you with this question, from Brown's Emergent Strategies, "How do we turn our collective full-bodied intelligence towards collaboration, if that is the way we will survive?"





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(Pictured top right: Asa Wilson | Asa & mother, Kim Wilson, with Dr. Wadzinski)

To learn more about Jordan's Syndrome and ways to get involved visit: jordansguardianangels.org

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