

Struthio BioSciences (“Struthio”) Business Plan – December 2024

1. Introduction

We present a plan for introducing OstriTrim, a powerful and safe dietary supplement that will compete against the GLP-1 Receptor Agonist (GLP-1 RA) obesity drugs in an important market – U.S. employer-funded health plans. Besides higher efficacy and safety, OstriTrim can be used to maintain weight loss, a failing of the GLP-1 RA drugs. Finally, we demonstrate that OstriTrim will contribute positively to the client's bottom line, unlike the GLP-1 RA drugs, which are a major net negative.

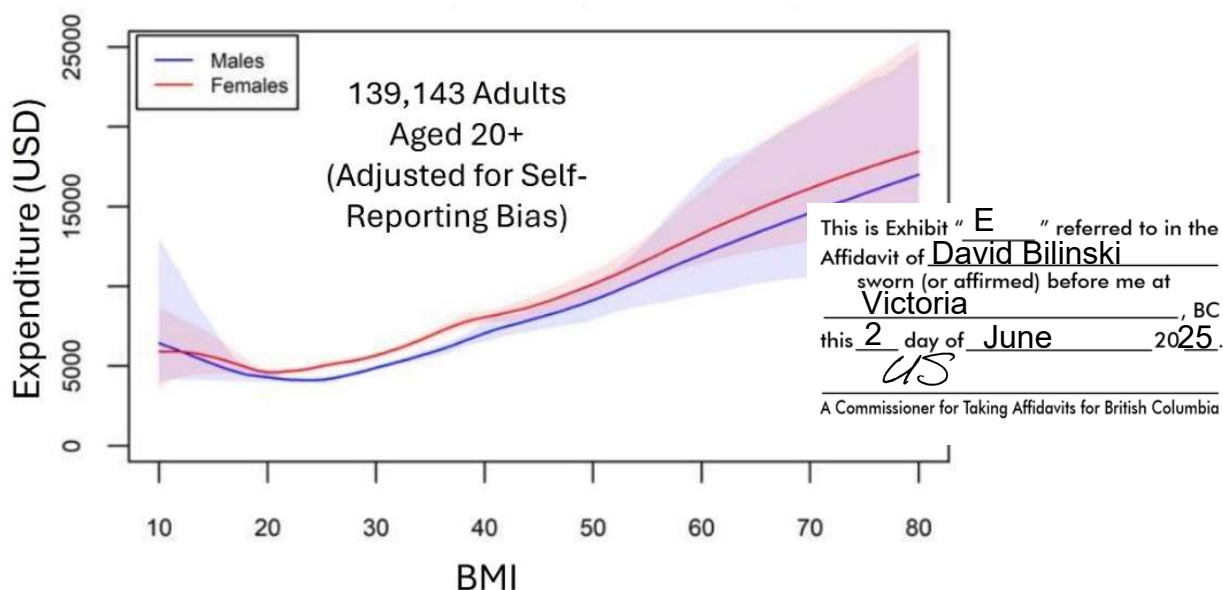
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2. Obesity and GLP-1 RA Drugs

2.1 Obesity

Obesity is a major risk factor for various non-communicable diseases like type 2 diabetes, heart disease, stroke, and some cancers. The World Health Organization estimates approximately 900 million obese individuals worldwide. In the U.S. the CDC estimates an adult obesity level of 40.3 per cent.

There is enormous cost associated with obesity. Researchers ¹ at the Harvard T. H. Chan School of Public Health and George Washington University were able to create a regression model linking medical expenditure and body mass index² (BMI). The relationship is shown below.



Based on this analysis, each unit of BMI reduction for the obese would result in an average annual savings of \$253 in 2019 dollars, or \$294 in 2024 dollars.

¹ [Association of body mass index with health care expenditures in the United States by age and sex](#), Z. J. Ward, S. N. Bleich, M. W. Long, S. L. Gortmaker, *PLoS One*. 2021; 16(3)

² BMI = (weight in kilograms) / (height in meters)²

2.2 GLP-1 RA Drugs and Their Market

GLP-1 receptor agonists (GLP-1 RA) drugs have revolutionized the treatment of type 2 diabetes and obesity. Discovered in the 1980s, GLP-1 RAs mimic the actions of the naturally occurring hormone glucagon-like peptide-1 (GLP-1), which stimulates insulin secretion and suppresses appetite. The first GLP-1 RA, exenatide, was approved in 2005, followed by a wave of longer-acting and more convenient formulations.

GLP-1 RAs represent the first, at-scale, therapeutic drug success for weight management. The global GLP-1 RA market was valued at approximately \$24.4 billion in 2023 and is projected to grow at a CAGR of 9.7% from 2024 to 2032 to \$55.7 billion³. This growth will be driven by an increasing prevalence of diabetes and obesity, the development of novel formulations, and the expansion of their therapeutic indications.

2.3 Performance of GLP-1 RA Drugs and Shortcomings

We use Novo Nordisk's GLP-1 RA drug Semaglutide (Wegovy and Ozempic) as an example. The "Step 1" trial⁴ reported a monthly weight loss of 0.96 kilograms. Novo Nordisk also reported⁵ that the most common side effects of Wegovy are gastrointestinal in nature. These include nausea (up to 44%), diarrhea (up to 30%), vomiting (up to 24%), constipation (up to 24%), abdominal pain (up to 20%). Less common side effects of Wegovy include pancreatitis, gallbladder problems, thyroid tumors, kidney problems, and low blood sugar.

Other reported shortcomings are more serious:

- According to Blue Cross Blue Shields analysis of actual usage data, 58% of members terminate usage of GLP-1 RA drugs before the end of 12 weeks, achieving no clinical success⁶
- Adherence to the treatment regimen drops to 32% by the end of first year⁷
- 67% of lost weight is regained within one year after cessation⁸
- Patients on GLP-1 RAs exhibited a 195% higher risk of major depression, a 108% increased risk for anxiety, and a 106% elevated risk for suicidal behavior⁹

³ [Global Market Insights Report ID: GMI5864 November 2024](#)

⁴ [Once-Weekly Semaglutide in Adults with Overweight or Obesity](#), New England Journal of Medicine, 2021 (Novo-Nordisk "STEP 1 Study Group")

⁵ [Wegovy safety data from three phase 3 weight-management clinical trials](#)

⁶ [Real-World Trends in GLP-1 Treatment Persistence and Prescribing for Weight Management](#), (Blue Cross/Blue Shield Issue Brief, May 2024)

⁷ [Real-World Analysis of Glucagon-Like Peptide-1 Agonist \(GLP-1a\) Obesity Treatment One Year Cost-Effectiveness and Therapy Adherence](#) (Blue Cross/Blue Shield Study)

⁸ [Weight regain and cardiometabolic effects after withdrawal of semaglutide](#) (STEP 1 Study Group)

⁹ [The risk of depression, anxiety, and suicidal behavior in patients with obesity on glucagon like peptide-1 receptor agonist therapy](#) (Nature.com Scientific Report), (2024) 14:24433

- Serious concerns on cost-effectiveness have been expressed ¹⁰

3. The OstriTrim Dietary Supplement

3.1 Ostrich Antibodies

Ostriches are a remarkably valuable source of powerful antibodies. Over its 23-million-year life as a species, the ostrich's immune system has adapted to become what many scientists consider to be the best of any animal. Within 4 weeks after immunization with an antigen, antibodies will appear in egg yolks. Ostrich antibodies are highly resistant to stomach acid and digestive processes, making oral delivery practical.

Struthio's Board Chairman Yasuhiro Tsukamoto, DVM, Ph.D., currently serving as President of Kyoto Prefectural University, has led research efforts in ostrich IgY. These efforts involved the production and testing of antibodies against a wide range of pathogens, allergens, toxins, hormones, and enzymes. Dr. Tsukamoto's Japanese company, Ostrich Pharma KK, holds more than 20 patents, covering both the process for producing the IgY as well as specific antibodies that were created. Ostrich Pharma KK has licensed them exclusively to Struthio for distribution outside of Japan.

3.2 OstriTrim Product

OstriTrim is a dietary supplement that contains the yolk of eggs produced by ostrich hens hyperimmunized against the human digestive enzymes amylase, sucrase, maltase, lactase, and lipase. OstriTrim works by neutralizing the bulk of these enzymes, thereby reducing the amount of carbohydrates and fats that are digested in a meal or snack. It has been referred to humorously as "dieting without dieting."

OstriTrim acts solely in the small intestine. The ostrich antibodies are too large to pass through the intestinal wall, so there is no entry into the bloodstream and consequently no systemic side effects. As a dietary supplement with no direct action on the body, OstriTrim does not require pre-market approval by the U.S. FDA or other regulatory entities.

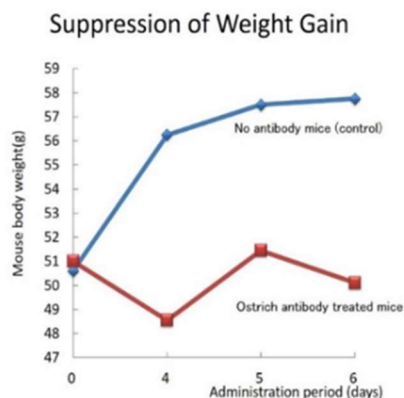
OstriTrim is covered by patents, including U.S. Patent US20180319896A1. ¹¹

3.3 Experience in Japan

Animal testing in Japan included providing mice with high fat intake and antibody dosage. Weight gain was clearly suppressed. The testing also demonstrated the suppression of post-prandial blood glucose level and triglycerides.

¹⁰ [Medications for obesity management: Effectiveness and value](#) (Summary Report from ICER - Institute for Clinical and Economic Review)

¹¹ [Method for manufacturing digestive enzyme antibody and egg having same, and for manufacturing processed product containing egg as ingredient thereof and composition including antibody](#)



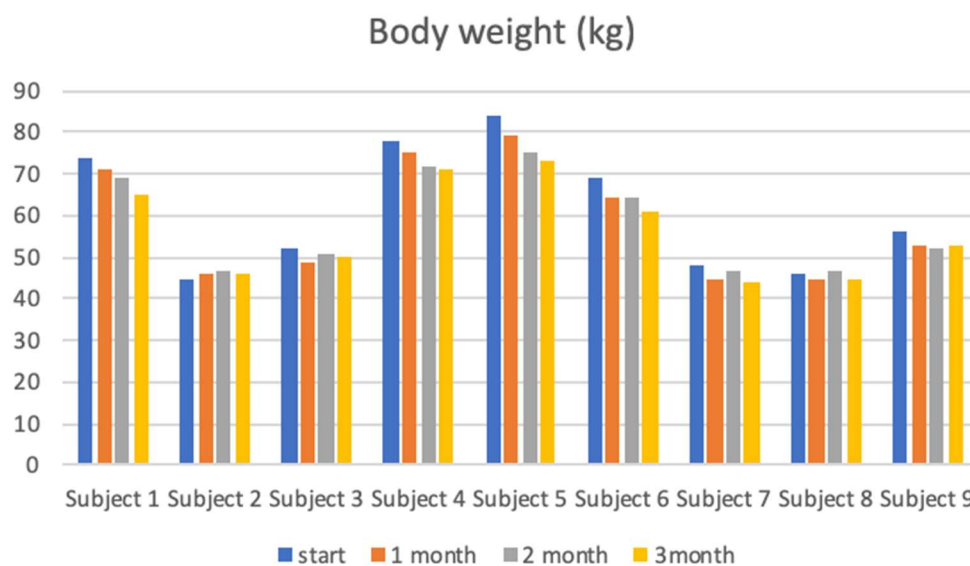
High-fat daily diet in old mice allowed to eat freely.



No antibody (control) Ostrich antibody treated

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Modest human testing was also conducted in Japan. A nine-person three-month study was performed by physicians at the Osaka University School of Medicine. Daily dosages were recommended, and there were no restrictions on food intake or exercise. The resulting weight measurements are shown below. Lower weight individuals, under 110 pounds, did not lose any appreciable weight; obese individuals did.



MetaSorb, a product containing digestive enzyme antibodies, has been manufactured by Zeal Cosmetics and sold in health food stores in Japan. MetaSorb has had just modest success, primarily because Japan has one of the lowest obesity rates in the world. According to the World Health Organization the prevalence of obesity in adults aged 18 and older in Japan is around 4.3% for women and 6.0% for men, about one-tenth the level of the U.S. The product has been positioned primarily to avoid weight gain from occasional heavy meals, not to lose weight.



4. Basic Advantages of OstriTrim Over GLP-1 RA Drugs

Using Semaglutide as a representative drug, OstriTrim has these basic advantages:

- Monthly weight loss (OstriTrim 3.3 kg vs. Semaglutide 0.96 kg)
- Monthly cost (OstriTrim \$600 vs. Semaglutide \$1,135)
- Side effects (OstriTrim none vs. Semaglutide's issues described in Section 2.3)

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A critically important matter is the maintenance of weight loss. Since obesity is a chronic disease, cessation of both OstriTrim and GLP-1 RAs will cause weight to be regained. There is no maintenance dosage of GLP-1 RAs. Full dosage is required to cause the brain to suppress appetite and increase satiety. With OstriTrim, reduced dosage or usage frequency can eliminate weight regain.

5. OstriTrim Target Market and Strategy

5.1 Employer Self-Funded Health Insurance Plans

According to a 2023 study by Statista¹², 86% of companies with 1,000-4,999 employees offer self-funded health insurance plans. For companies with 5,000 or more employees, this percentage rises to 96%.

The Kaiser Family Foundation reported,¹³ as of March 2023, approximately 164.7 million people under the age of 65 in the U.S. were covered by employer-sponsored health insurance. A study by the American College of Occupational and Environmental Medicine (ACOEM)¹⁴ estimates that 29% of employed adults in the U.S. are obese. Thus, the number of obese people in the U.S. covered by employer health plans is estimated to be 47.8 million.

An Accolade survey¹⁵ of 500 employers determined that 25 percent of employers offer coverage of GLP-1 RA drugs, and that percentage is expected to grow to 43 percent in 2024. 38% cited cost as a potential barrier to providing coverage.

5.2 Obesity Cost for Employer Self-Funded Health Insurance Plans

In 2023 there was a total cost of \$265.1 billion to employers due to obesity, consisting of:

- Direct medical costs: \$146.5 billion
- Disability payments: \$31.1 billion
- Workers' compensation: \$5.2 billion
- Absenteeism: \$82.3 billion

¹² [Percentage of U.S. workers covered by self-funded health insurance plans in 2023, by plan type and firm size](#)

¹³ [Employer-Sponsored Health Insurance 101, May 28, 2024](#)

¹⁴ [Obesity Has Causal Impact on Job Absenteeism and Related Costs, July 11, 2021](#)

¹⁵ [Press Release: GLP-1 Coverage in Employer Plans Could Nearly Double in 2024](#)

In effect, for employer self-funded plans, every dollar of medical cost for the obese and overweight, goes along with an accompanying cost of 45 cents. Thus, an employee's loss of 1 BMI produces direct annual savings of \$352 for the employer, along with annual absentee cost savings of \$106.

5.3 OstriTrim and Semaglutide Cost-Benefit Comparison

It is instructive to compare the cost-benefit of OstriTrim and Semaglutide through the example of an obese employee losing 40 pounds. In this example, the employee using OstriTrim reaches the target weight in 4 months and then transitions to a maintenance level at one-sixth of the weight loss level. The employee using Semaglutide achieves the 40-pound loss in 19 months, and then ceases usage, since there is no maintenance dosage for GLP-1 RA drugs. The details of the example are shown below¹⁶.

	OstriTrim	Semaglutide
Months to Achieve	4	19
Monthly Cost	\$600	\$1,135
Monthly Maintenance Cost	\$100	\$0
First Year Cost	\$3,200	\$13,620
First Year Savings	\$2,335	\$1,480
Second Year Cost	\$1,200	\$7,876
Second Year Savings	\$2,335	\$2,335
Third Year Cost	\$1,200	\$0
Third Year Savings	\$2,335	\$778
Succeeding Years Cost	\$1,200	\$0
Succeeding Years Savings	\$2,335	\$778

Savings include healthcare, workers' compensation, and disability. We do not include absenteeism. The savings for Semaglutide drop off dramatically because 2/3 of the lost weight is regained.

Since average employment duration in large companies is 5 years, it is illuminating to look at the 5-year net present value of the annual net savings (savings – cost).

Net Savings	Year 1	Year 2	Year 3	Year 4	Year 5	5 yr NPV @ 5%
OstriTrim	(\$865)	\$1,135	\$1,135	\$1,135	\$1,135	\$3,010.66
Semaglutide	(\$12,140)	(\$5,541)	\$778	\$778	\$778	(\$14,666.39)

¹⁶ Notes: (1) OstriTrim user switches to maintenance in month 5; (2) Savings = Medical + Disability + Workers Comp; (3) Semaglutide savings drop due to the regaining of 2/3 of the lost weight

Beyond the improvement of employee health and well-being, and likelihood of retention, OstriTrim makes a positive contribution to the bottom line of the company.

5.4 Business Concept

OstriTrim will be distributed through partnerships with third-party administrators (TPAs) of employer self-funded plans. Employers would offer OstriTrim at no charge to employees.

The TPA would sign up employees and pass orders for OstriTrim to Struthio for shipping to participating employees. The TPA would bill the employer for OstriTrim and collect payment.

We would also establish an exclusive partnership with a health services provider that is currently providing services such as telemedicine, virtual care, and nurse advice lines. The partner would:

- Introduce and help sell OstriTrim participation to their TPA clients
- Provide guidance and support to employees using OstriTrim

The TPAs and the health services provider would share in OstriTrim revenue.

6. OstriTrim Production

Production of the OstriTrim product is totally driven by the provision of ostrich eggs with yolk containing the requisite antibodies. Ostrich egg production is seasonal, not year-round. Ostriches are vaccinated each year before the start of laying season, and one or boosters follow through the course of the season.

A mature ostrich hen lays about 30 eggs per year. After eggs are collected, the yolks are freeze-dried for storage and eventual inclusion with other ingredients to be pressed into tablets. Each egg contains antibodies sufficient to produce 15 one-month supply bottles of OstriTrim.

Struthio has an exclusive agreement with Universal Ostrich (“UO”), a British Columbia, Canada company, to supply ostrich eggs at a price of USD 500 per egg. UO has developed a network of satellite farms in the U.S. and Canada. The UO network business model will enable enormous growth in the number of ostriches producing the antibodies for OstriTrim. Prior to teaming with Struthio their business model was selling breeding ostriches to the satellite farms, and then buying back yearling ostriches for meat, oil, feather, and leather processing. The plan is to divert ostriches from processing, maintaining them for an additional year until maturity, and then assigning them to OstriTrim egg production. UO will also acquire mature ostriches (approximately \$5000-6000 per bird).

7. Struthio Leadership (brief bios are in the Appendix)

Yasuhiro Tsukamoto, DVM, Ph.D. – Chairman of the Board

Responsible for development and testing of new antibodies and supporting pre-clinical research for new products.

Stuart Greenberg, Ph.D. – CEO

Responsible for overall management of the company and building distribution partnerships.

Carol Epstein, M.D. – Chief Medical Officer

Clinical development and coordination with pharmaceutical partners.

Karen Espersen – Chief Executive Officer of Production Development and Research

Responsible for maximizing egg production and quality of eggs for Struthio

David Bilinski – Chief Executive Officer of Operations and Research

Responsible for expansion of production for Struthio

8. Financial Projections

The assumptions:

Bottle Price (USD)	600	Marketing and Sales	4%	of Revenue
Price per Egg (USD)	500	General & Administrative	3%	of Revenue
Total Cost per Bottle (USD)	47	Contingencies	3%	of Revenue
Bottles per Egg	15	OPKK Royalties	4%	of Revenue
% of Production to Inventory	30%	TPA Share	10%	of Revenue
Egg Pre-purchase %	50%	Health Services Provider Share	20%	of Revenue

The sizable amount of production to inventory is due to the laying season, which runs from April through September. There must be enough inventory to fulfill sales through the first quarter of the following year.

It is believed that demand will exceed supply, which is driven almost totally by the number of egg-laying hens. The plan for hens (and necessary roosters) is:

	2,025	2026	2027	2028	2029
Laying Hens	300	1,000	2,500	5,000	10,000
Roosters	100	333	833	1,667	3,333
TOTAL	400	1,333	3,333	6,667	13,333

Based on the assumptions and the ostrich plan, the five-year P&L projection is shown below.

	2025	2026	2027	2028	2029
Number of Bottles Produced	135,000	450,000	1,125,000	2,250,000	4,500,000
Number of Bottles in Starting Inventory	15,620	121,500	135,000	337,500	675,000
Number of Produced Bottles to Inventory	121,500	135,000	337,500	675,000	1,350,000
Bottles committed to Trials	9,000	6,000	6,000	6,000	6,000
Number of Bottles Sold	20,120	430,500	916,500	1,906,500	3,819,000
Number of New Users	3,353	70,632	128,088	250,392	485,678
Cumulative Users	3,353	73,986	202,074	452,466	938,144
(In USD 1000s)					
Revenue	12,072	258,300	549,900	1,143,900	2,291,400
Cost of Sales					
Bottle Cost	952	20,377	43,381	90,241	180,766
Health Services Provider Share	1,811	38,745	82,485	171,585	343,710
TPA Share	604	12,915	27,495	57,195	114,570
OPKK Royalties	483	10,332	21,996	45,756	91,656
Total Cost of Sales	3,850	82,369	175,357	364,777	730,702
Gross Profit	8,222	175,931	374,543	779,123	1,560,698
Other Expense					
Marketing and Sales	483	10,332	21,996	45,756	91,656
General & Administrative	362	7,749	16,497	34,317	68,742
Contingencies	362	7,749	16,497	34,317	68,742
Total Other Expense	1,207	25,830	54,990	114,390	229,140
EBITDA	7,015	150,101	319,553	664,733	1,331,558

9. Struthio Investment

9.1 Funds Required

To execute its plan, Struthio requires an investment of USD 10 million. The funds would be used as follows:

Item	Amount (USD)
Purchase of 700 frozen egg yolks from UO	350,000
Pre-purchase of ½ of 2025 eggs from UO	2,073,000
Volume Production Setup	500,000
OPKK Upfront Royalty	3,400,000
Working Capital	3,000,000

9.2 Market Potential and Accelerated Growth Possibilities

If we assume that the average weight loss is 30 pounds, the planned production of Section 8 would engage just 2 percent of all obese employees. Retained earnings will let us achieve the planned production, but we believe that early success will create enormous demand for OstriTrim. To drive faster to a higher penetration level, say 20 to 30 percent, would necessitate raising capital in the several hundred million range, either through an IPO or debt financing.

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9.3 A Unique Investment Opportunity

Struthio has some distinct advantages beyond high growth and profitability:

- A proven product ready for North American manufacturing and distribution
- A natural dietary supplement that is more effective and safer than established medical treatments
- A usage regimen that will make money for, not cost money to, its clients
- Strong intellectual property protection and a massive buildup of ostrich production that forms a barrier to entry for competitors
- A significant contribution to public health and well-being

Appendix – Biographical Information

Yasuhiro Tsukamoto, DVM, Ph.D. – Chairman of the Board

Dr. Tsukamoto is currently President of Kyoto Prefectural University (KPU). Prior to his election as President, he was a professor in the Department of Animal Hygiene, Graduate School of Environmental and Biological Sciences at KPU. He founded Ostrich Pharma KK, in 2009 to develop and commercialize powerful ostrich antibodies. His paper on that subject was commended with a 2009 Minister of Education, Culture, Sports, Science and Technology Award. Prior to his academic position at Kyoto Prefectural University, Dr. Tsukamoto was a visiting research fellow at Ontario Veterinary College, University of Guelph, Canada and was Associate Professor, Veterinary Medical Sciences, Graduate School of Agricultural & Biological Sciences, Osaka Prefecture University. He is the author of more than 70 technical publications and is the holder of several international patents related to ostrich antibodies.

Dr. Tsukamoto earned his D.V.M. from Veterinary Medicine Study Program, Faculty of Agriculture, Osaka Prefecture University, and a Ph.D. in Veterinary Medical Science from the Graduate School of Agricultural & Biological Sciences, Osaka Prefecture University.

Stuart Greenberg, Ph.D. – CEO

Dr. Greenberg has over 40 years of experience in product development, business development, and management consulting. His areas of focus are information technology, biotech, and energy technology. Dr. Greenberg has held management and executive positions at IBM, The Analytic Sciences Corporation (TASC), Digital Equipment Corporation, and Fidelity Investments. He also founded two startups – InfoPlus and Traceware Corp.

Dr. Greenberg received the B.S. in Electrical Engineering from the University of Pennsylvania, and the M.S. and Ph.D. in Electrical Engineering from M.I.T.

Carol Epstein, M.D. – Chief Medical Officer

Dr. Epstein has been in the biopharmaceutical industry for over 25 years. She has served as Chief Medical Officer of IRX Therapeutics, Inc. She started her career in the pharmaceutical industry in 1983 with Ayerst, a division of American Home Products. She served as Vice President and Chief Medical Officer at Immunex, where she built the clinical group and was responsible for the successful clinical strategy that led to the approval of GM-CSF. She was Chief Medical Officer at Immunogen, and subsequently co-founded BioLogics Services, Inc. Dr. Epstein was co-founder of MediVector, Inc. where she served as Executive Vice President and Chief Medical Officer. Dr. Epstein is a recognized expert in development of clinical and preclinical strategy and in clinical trial management.

Dr. Epstein is board-certified in internal medicine and rheumatology. She received her BS degree from M.I.T., M.D. from Yale University School of Medicine, and did her internal medicine and fellowship training at NYU-Bellevue.

Karen Espersen

Chief Executive Officer of Production Development and Research

Karen has 34 years of research and development within the Ostrich Industry. Karen wrote three scientific research papers which were published with the Government of Canada regarding new and innovative techniques for successful ostrich production. She was instrumental in initiating research in Ostrich oil, establishing processes and diets to create the number one ostrich oil in the world for omegas, 1: 1.2 ratio of omega 3 to 6. With Karen's 34-year experience with Ostrich husbandry skills, she is the first to create innovative treatments for ostrich related problems. She set up quarantines and managed them, working closely with numerous veterinarians with expertise in Ostrich. From them she learned various medical procedures. She owned and operated the largest ostrich farm in Canada and served as a director on the Alberta and Canadian Ostrich Association board. She is the Founder and President of Universal Ostrich Farms inc., Vice President of Omega Ostrich Inc. and Co-Owner of ONU Body Care Inc. Karen co-founded Struthio Bioscience with David Bilinski to harness the immune system of the ostrich.

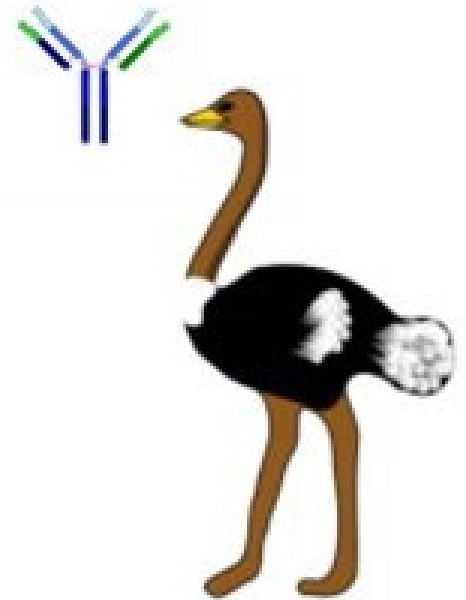
David Bilinski – Vice President of Production Development

Born and raised in B.C. Canada, Dave started his working life as an 18 year old forestry contractor and throughout his career introduced numerous innovative processes and leading edge technologies. He transitioned into beef production owning a 750 cow ranch before realizing that the ostrich had many more benefits for humans. In 1993 Dave partnered with Dr. Bob Church and started Rocky Mountain Ostrich. RMO built ostrich quarantines in Zimbabwe, Namibia, and the UK to import selected genetics into Canada. Joined forces with Karen Espersen who owned the largest ostrich farm in Canada and brought his knowledge and expertise in superior genetics to build Universal Ostrich Farms Inc to what it is today. Dave initiated a DNA fingerprinting program for ostrich. In 2020 Dave co-founded Struthio Bioscience with Karen Espersen to harness the amazing immune system of the ostrich to produce antibodies for improving human health. Dave remains active in all phases of the ostrich industry.

Struthio Bioscience Inc.

Commercialization of Ostrich Antibodies

February 2024



Our Mission

- Our mission is to provide top quality IGY Antibodies
- We are on the leading edge of technology which will change the landscape of how we treat viruses and diseases. We are producing antibodies from a natural process that can create curative products in mass production.

Ostrich Immune System

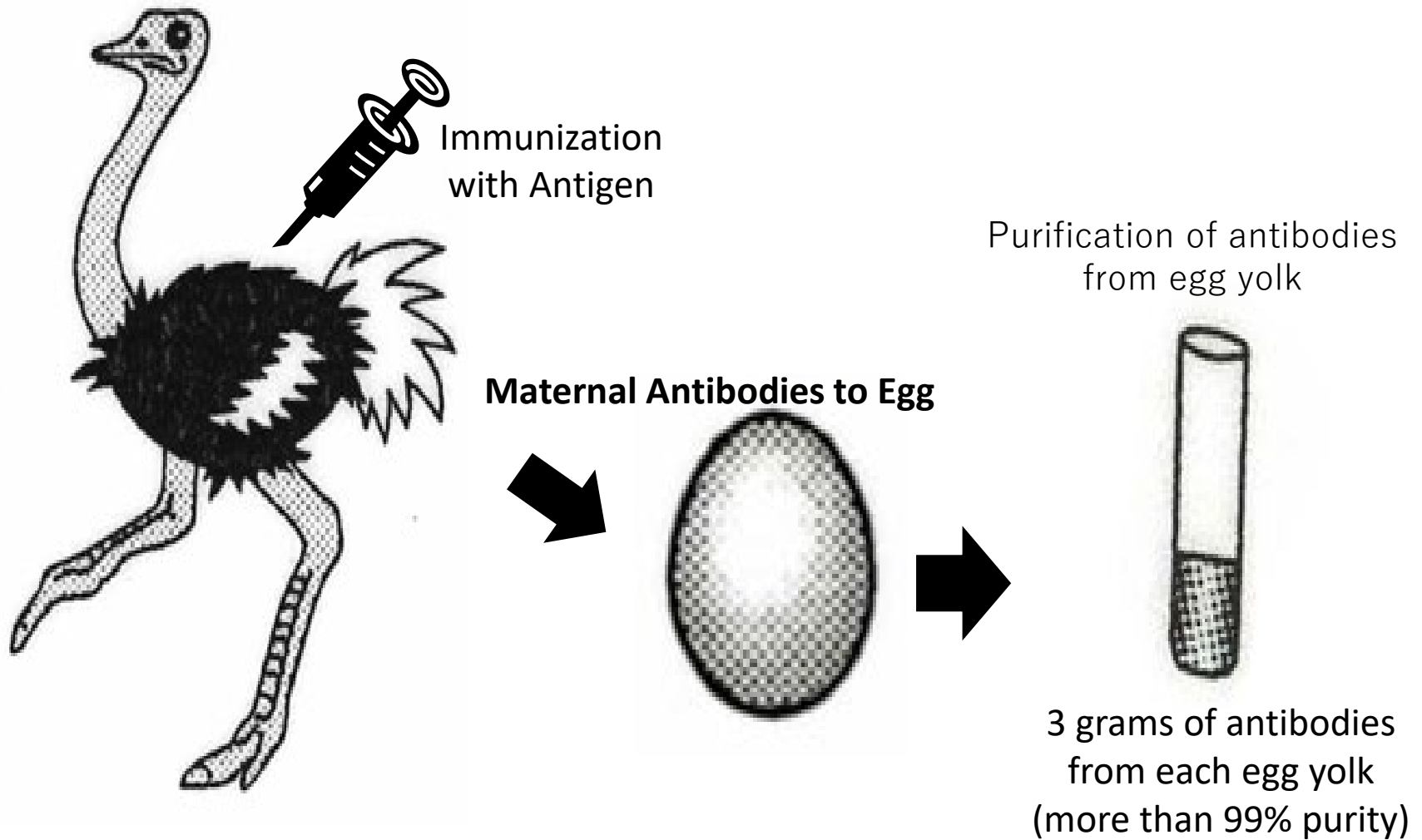
Most Powerful on the Planet

- Developed over 70 million years
- Reacts to a wider range of antigens than other birds or mammals
- Ostrich immunoglobulin (“IgY”)
 - Appears in the blood within two weeks of immunization
 - Appears in eggs within 4 to 6 weeks of immunization
 - Neutralizes its target antigen better than the IgY from other birds or the antibodies produced by any mammal
 - Is acid and high temperature resistant
 - Is minimally affected by digestive enzymes
 - Ostriches are not harmed

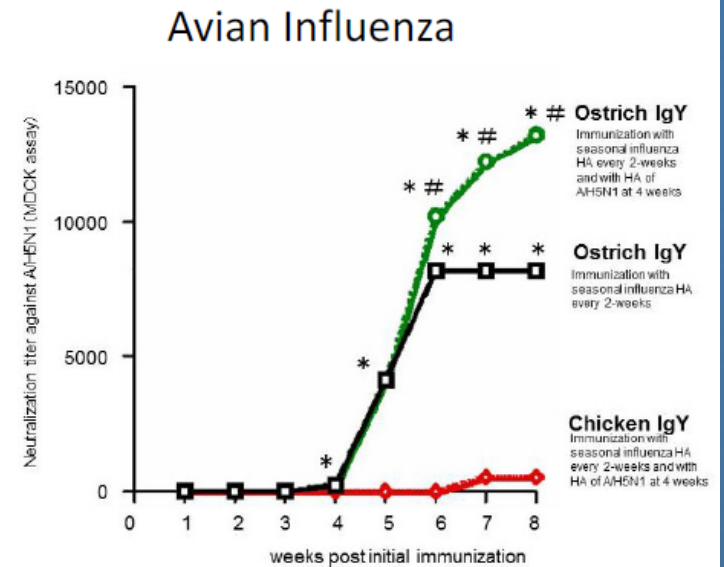
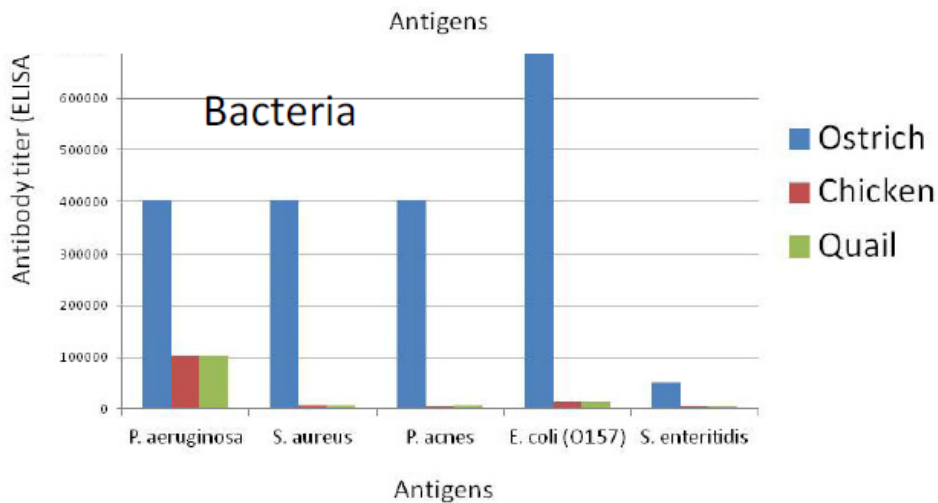
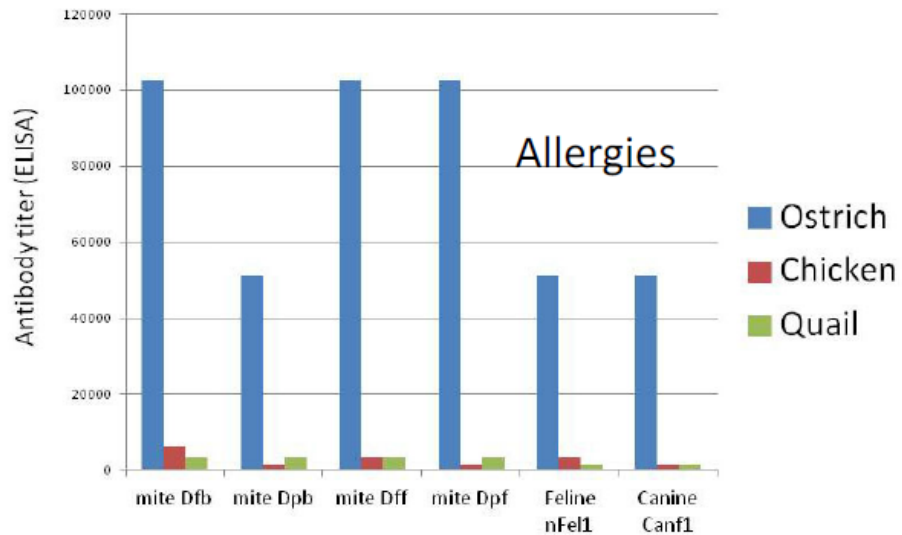
The Driving Force
Yasuhiro
Tsukamoto,
D.V.M, Ph.D,
Currently
President of
Kyoto Prefectural
University, Japan

- Twenty-five years of research funded by Japan Science & Technology (JST)
- 50 ostrich farm in Kobe, Japan for R&D
- Produced IgY against a wide range of bacteria, bacteria toxins, viruses, enzymes, hormones, and allergens
- Developed a highly productive and economical process for purifying IgY
- Formed Ostrich Pharma KK (“OPKK”) to offer IgY as an active ingredient in several products in Japan
- Inventor and assignee of all ostrich IgY patents
- Formed Ostrich Pharma USA (“OPUSA”) with Dr. Stuart Greenberg to develop and market ostrich IgY products.
- Chairman for Struthio BioScience Inc.

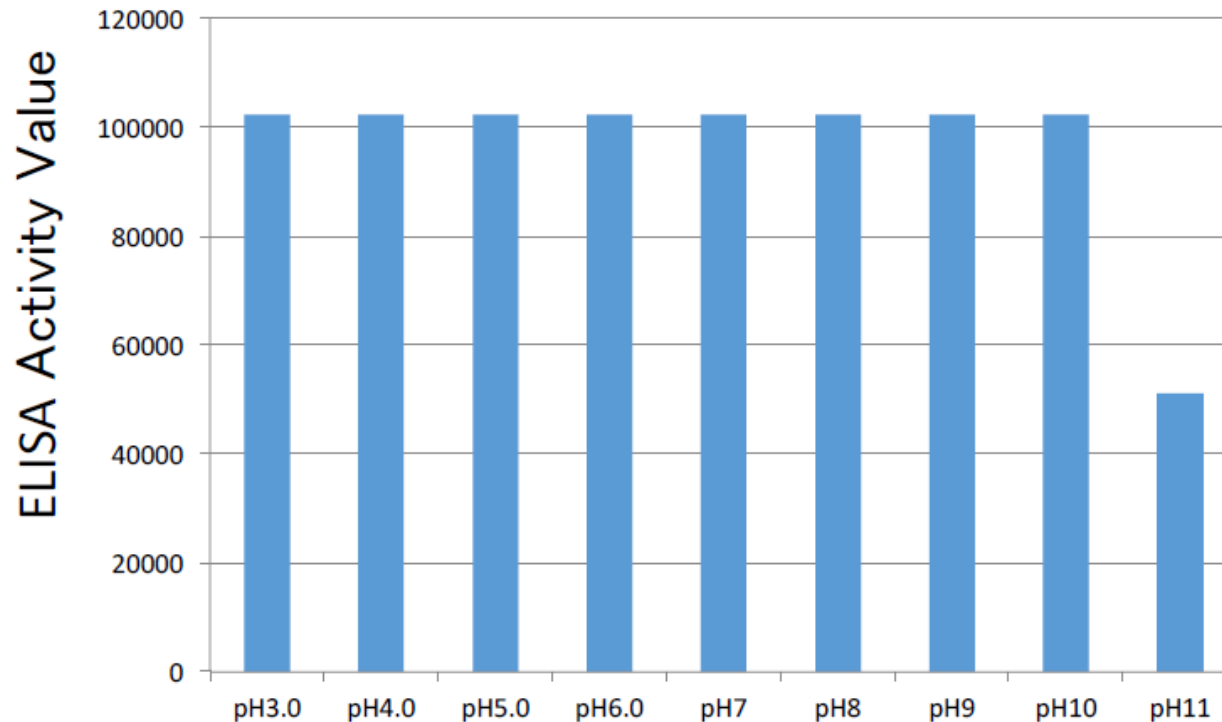
Antibody Production



Ostrich IgY Versus Other IgY

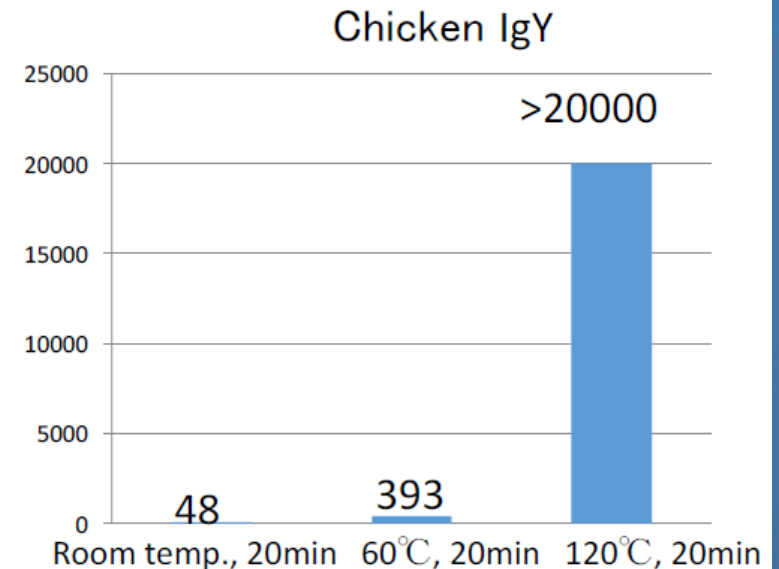
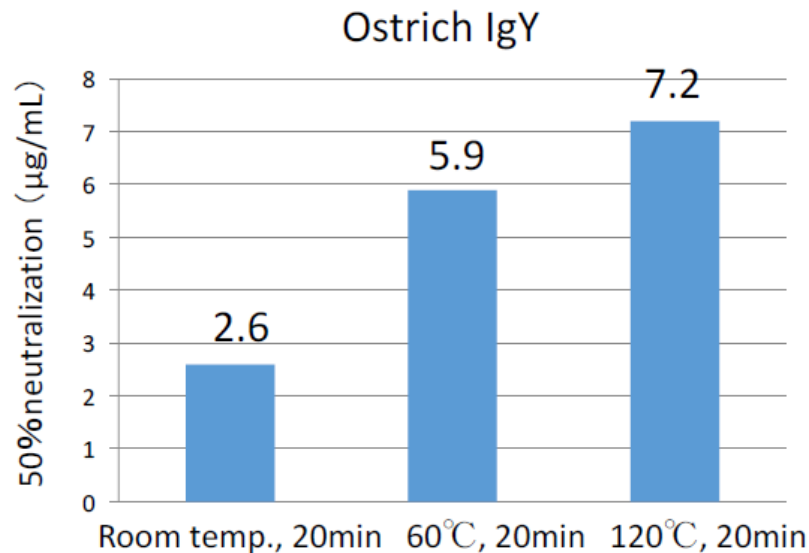


Ostrich IgY Acid Resistance



Binding activity of Ostrich IgY against S. aureus in various pH conditions (ELISA)

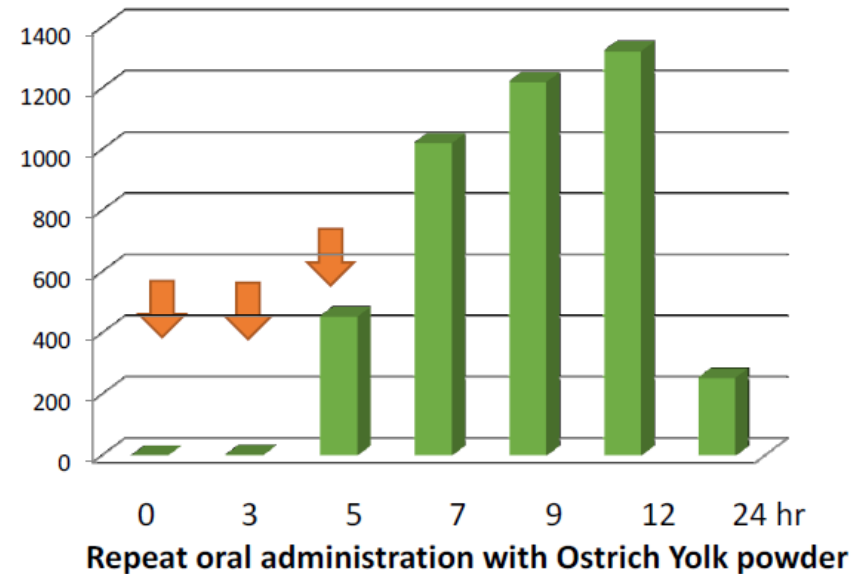
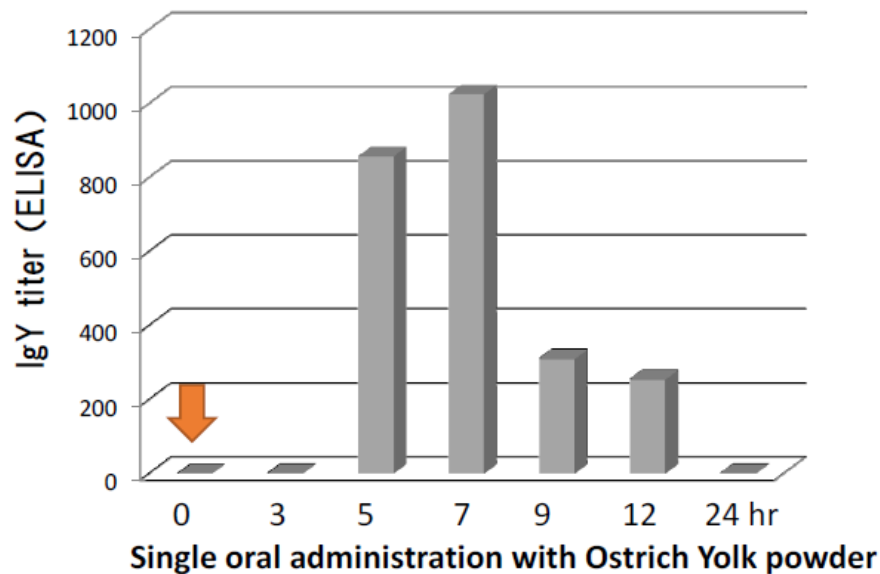
Neutralization Activity of ostrich IgY is Stable at High Temperature



Infection of MDCK cells with seasonal influenza virus A / H1N1 (100 TCID₅₀)

Neutralizing antibody titer of ostrich IgY and chicken IgY was measured after temperature treatment (treatment of IgY solution at 20 mg / mL concentration at room temperature for 20 minutes, treatment at 60 ° C. for 20 minutes, treatment at 120 ° C. for 20 minutes). It is indicated by the amount of antibody showing 50% inhibition of infection. The lower the 50% neutralizing antibody amount (ug / ml), the higher the neutralizing activity.

Ostrich IgY is Active in Gastrointestinal Tracts

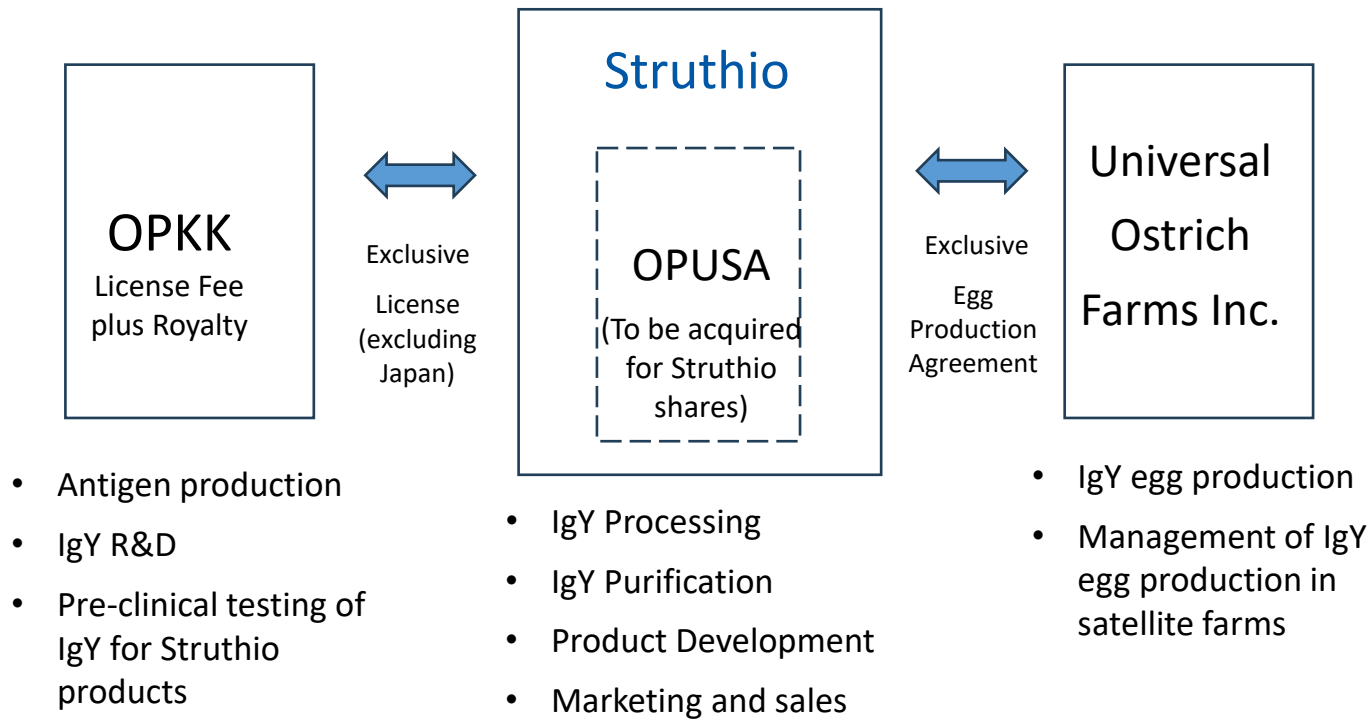


Hamsters were orally administered with ostrich yolk powder from cholera toxin immunized ostrich, and IgY titer against cholera toxin was measured in feces by ELISA

Ostrich IgY production in Eggs

- Approximately 30 eggs per year in a 55 year productive lifetime
- 3g of IgY per egg
- 99%+ IgY purification from egg yolk
- Production cost is two to three orders of magnitude lower than that of other avian and rodent antibodies

Ostrich IgY Team



Ostrich Pharma KK
("OPKK")

IgY R&D, Antigens,
IgY Sales in Japan

36 Different Antibodies Created and Tested to Date

Viruses

Bacteria and bacteria toxins

Pollen and dust allergens

Enzymes

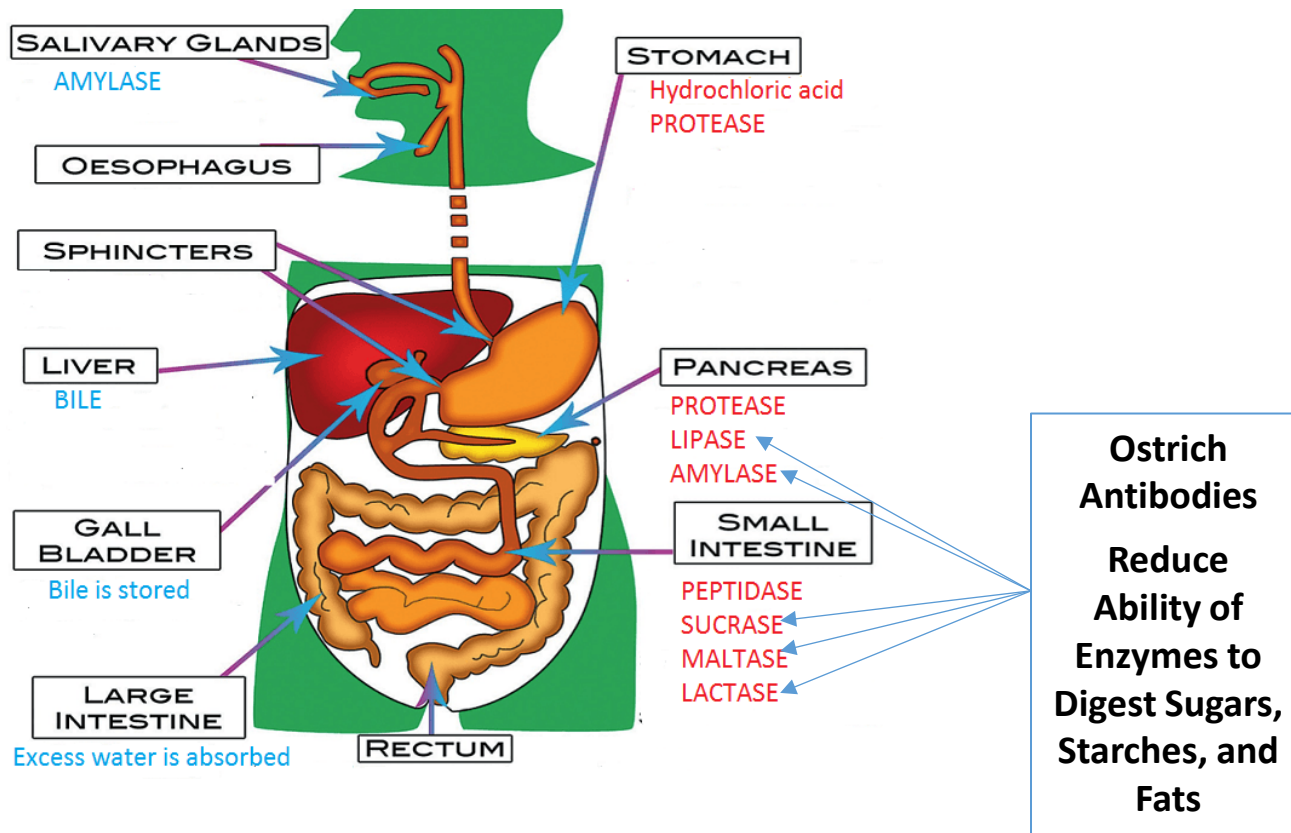
Hormones

**Worldwide patents on the processes and on
specific antibodies have been issued**

Ostrich
Antibodies
to *P. acnes*
and *S.*
aureus



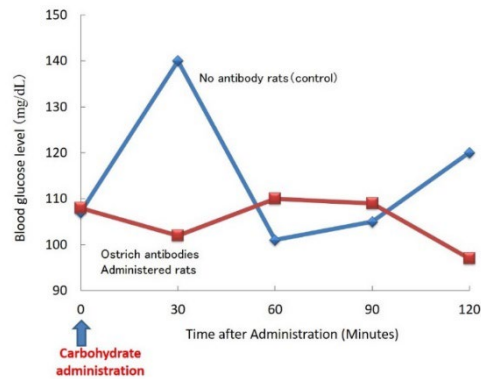
Digestive Enzyme Neutralization



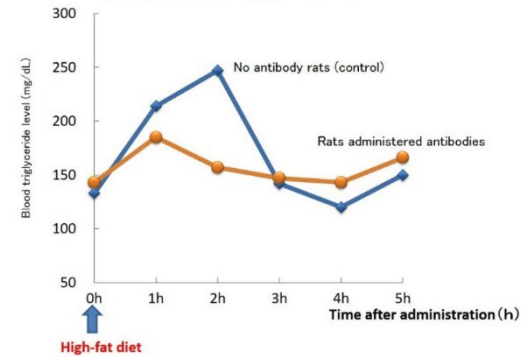
15

Animal Testing

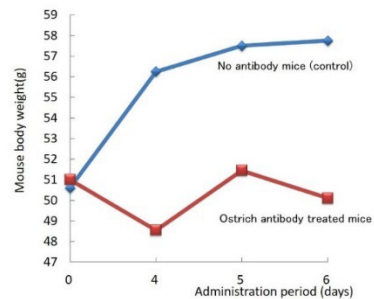
Suppression of the Rise of Postprandial Blood Glucose Level



Drinking ostrich antibodies suppresses the rise of postprandial triglycerides



Suppression of Weight Gain

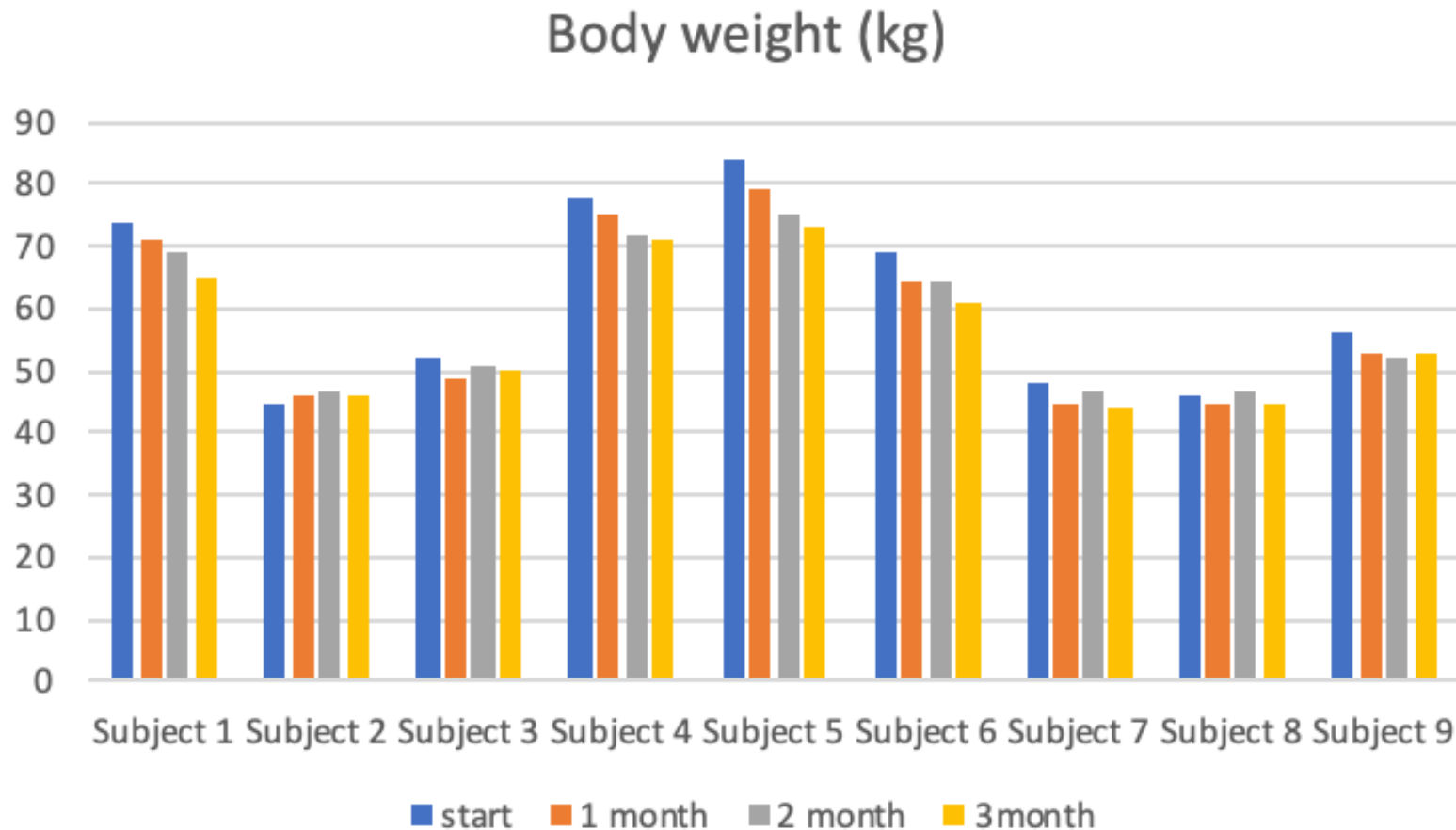


High-fat daily diet in old mice allowed to eat freely.

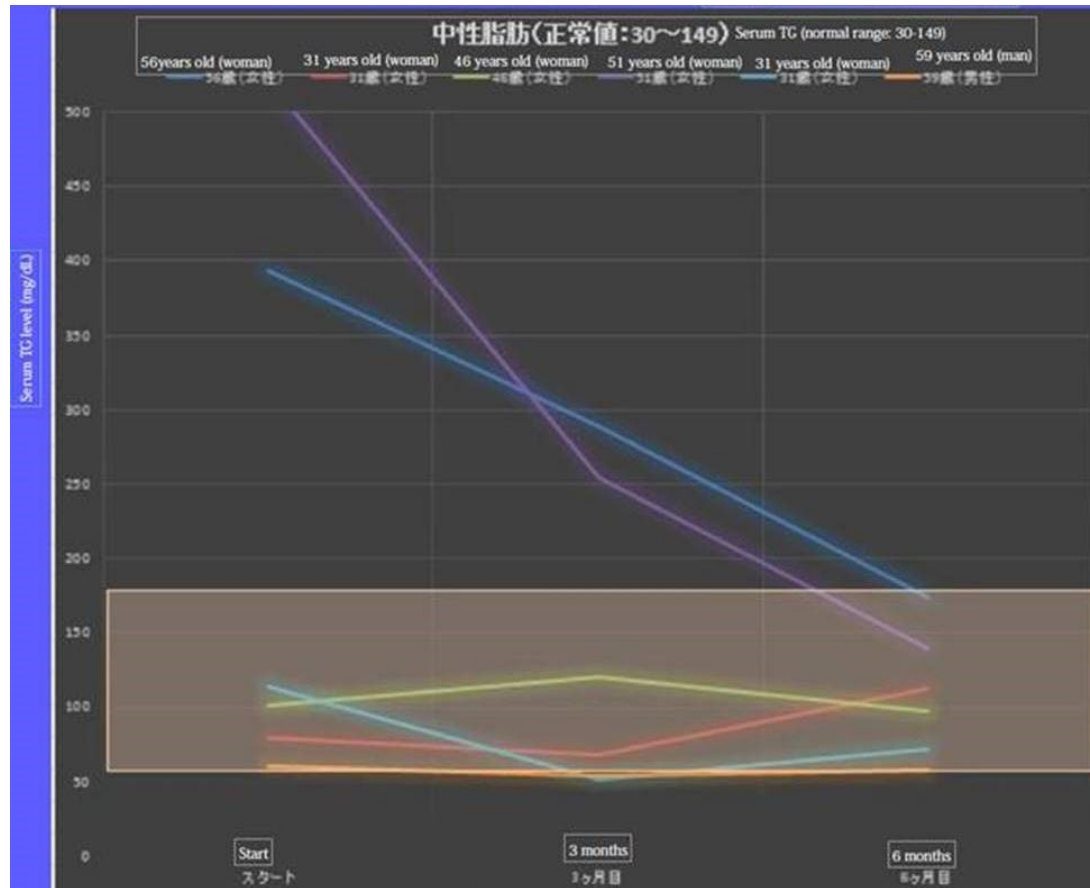


No antibody (control) **Ostrich antibody treated**

Human Testing - Weight



Human Testing – Blood Triglycerides

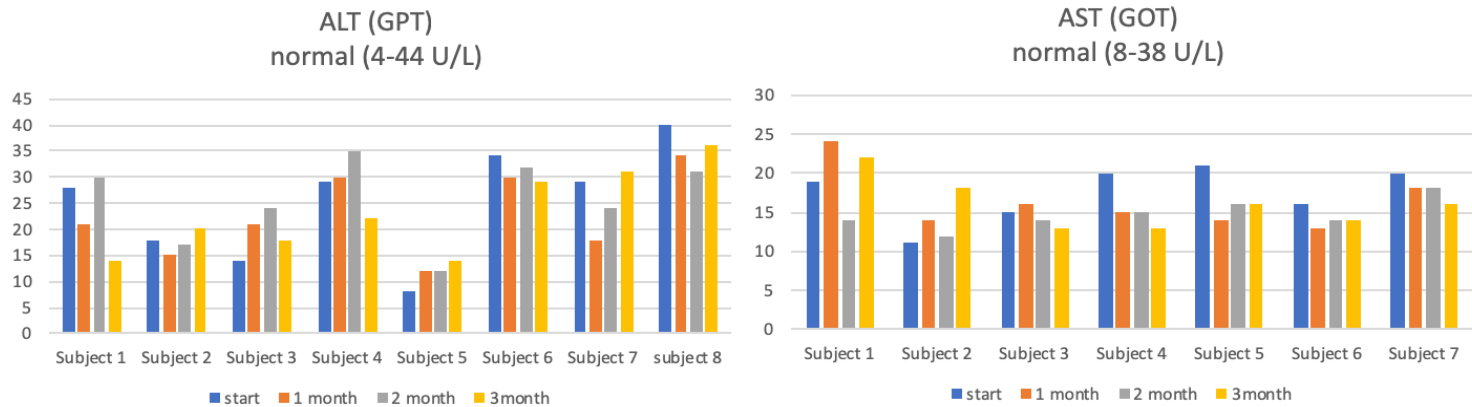


Blue – Subject 4

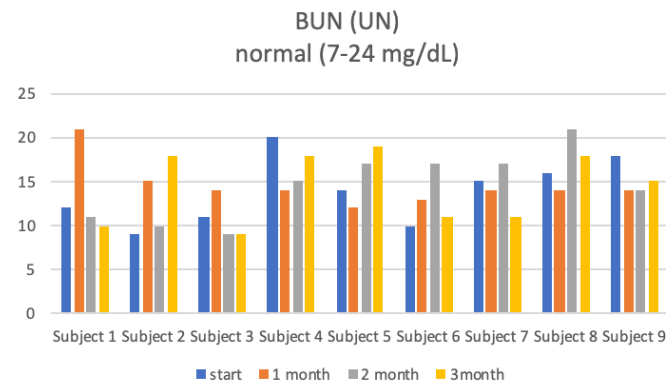
Purple – Subject 5

Human Testing - Safety

Liver



Kidney



All Results
Within
Normal
Range

Human Data – Additional Example

- Type II Diabetes Patient
 - 226 lbs.
 - 3,000 calories per day
“normal diet”
- 75-day supplement use
 - No change in diet or exercise
 - Weight reduced to 196 lbs.
 - Triglycerides from 608 to 495
 - HDL from 37 to 44
 - A1C from 7.0 to 6.4



Commercial Uses in Japan

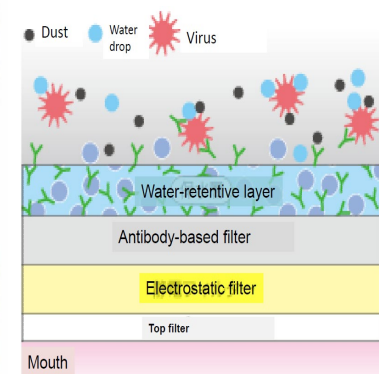


Cosmetics with antibodies against *P. acnes* and *S. aureus*



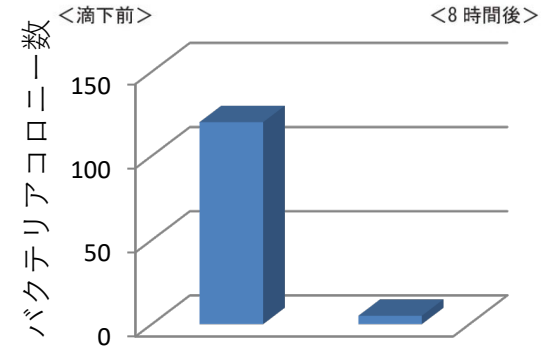
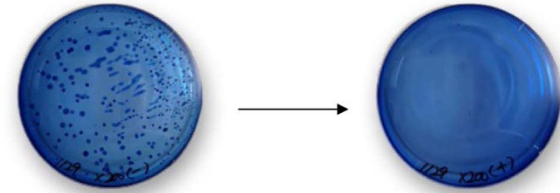
Antibodies to *Salmonella* and *E. coli* added to soy sauce

Antibodies against influenza and allergens added to masks



Ostrich antibody against tooth decay bacteria

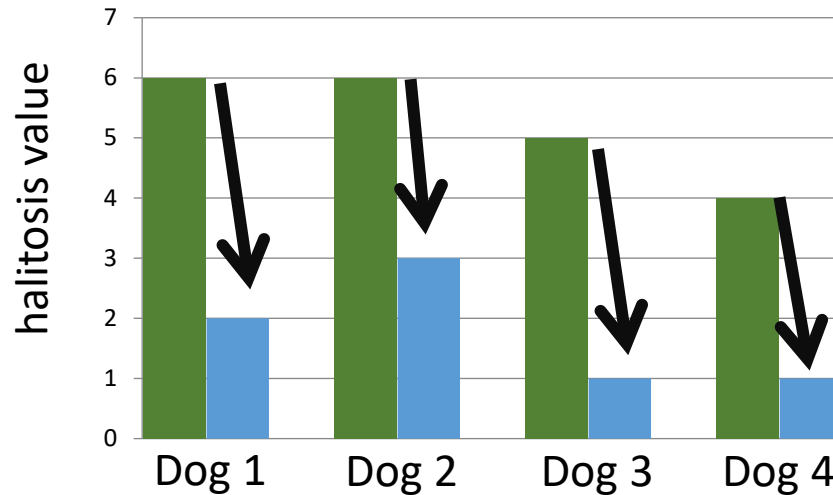
49



Suppression of growth of Streptococcus mutans



Halitosis Meter



Halitosis reduction effect of ostrich antibody drinking water (dog)

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Patents Issued and Assigned to OPKK

Antibody and antibody-containing composition
 Method for production of antibody using ostrich
 Method for producing antibody against influenza virus
 Ebola virus treating agents
 Monoclonal antibody to CD166 and method for production thereof
 Antibody for norovirus, and method for producing the same
 Antibody and antiserum against mers
 Production method of antibodies preventing infection of chickens
 Antibody against alopecia-inducing substance as antigen, composition and ...
 Therapeutic drug of highly pathogenic avian influenza virus h5n1 infection ...
 Antibody produced using ostrich and method for production thereof
 Ostrich yellow egg antibody-containing candy production method and ostrich ...
 Aqueous solution of ostrich antibody
 Method for manufacturing digestive enzyme antibody and egg having same, and for ...
 Antibody produced from ostrich and filter using the same
 Antibody-including pollen allergy protective material
 Method for producing antibody to food poisoning bacterium
 Antibody to nicotiana tabacum extract and production method thereof
 Antibody for hair improvement use
 Ostrich antibody for bacterial infectious diseases
 Method for manufacturing digestive enzyme antibody and egg having same, and for ...
 Diagnostic agent for cancer and rheumatism, and inspection/diagnosis method
 Diagnostic agent for cancer and rheumatism, and examination and diagnostic ...
 Allergen antibody, and composition having the same
 Allergen antibody, composition having the same, and filter having antibody

Struthio BioScience Inc

Pharmaceutical product development and sales

Struthio Business Model

- Create and sell new end consumer products where justified
 - OstriGrow – hair growth for androgenetic alopecia
 - OstriTrim – weight loss
- Jointly create end consumer products with R&D and pharmaceutical company partners
 - OstriChol – cholera prophylactic
 - OstriHeal – wound and burn treatment
 - OstriClear – acne and atopic dermatitis treatment
- Create with R&D partners ingredients for inclusion in third-party end consumer products
 - OstriZon – Zonulin neutralizer

Hair Loss Treatment – U.S. Market

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- 2022 U.S. Market Size – USD 3.4bn with 2.7% Compound Annual Growth Rate (source: IBISWorld)
- Several hundred products containing minoxidil or finasteride form the bulk of the market
- Minoxidil
 - Increases blood flow to follicles, helping stimulate hair growth
 - Does nothing to stop follicle miniaturization, so effect is temporary, and eventually it will be ineffective
 - Side effects include a light-headed feeling and increased heart rate
- Finasteride
 - Works by reducing production of 5 α 2 in the body, so that less DHT reaches the follicles
 - Reduced DHT in the bloodstream causes side effects like impotence, loss of libido, and gynecomastia

OstriGrow Relative Efficacy

	Test Group	Control Group	Age Range	12 Weeks	24 Weeks Over Control	48 Weeks Over Control
OstriGrow	17	-	39 to 78	71%	-	-
Minoxidil	18	18	18 to 40	-	9%	22%
Finasteride	28	27	22 to 40	-	6%	9%

Vera Price, Emory Menefee,
Matilde Sanchez, Patrick
Ruane, Keith Kaufman
Department of Dermatology,
University of California, San
Francisco

Changes in hair weight and hair count
in men with androgenetic alopecia,
after application of 5% and 2% topical
minoxidil, placebo, or no treatment, J.
American Academy of Dermatology,
Volume 41, Issue 5, November 1999.

Changes in hair weight and hair
count in men with androgenetic
alopecia after treatment with
finasteride, 1 mg, daily, J. American
Academy of Dermatology 2002
Apr;46(4):517-23 **83** 28

OstriGrow Safety

Ostrich IgY molecular weight is 190,000 g/mol

Compare with:

	Use	Molecular Wt (g/mol)
Minoxidil	Vasodilator	209
Finasteride	DHT Blocker	373

Topically applied ostrich IgY is much too large to enter the bloodstream

No Bloodstream Entry  **No Systemic Effects**

OstriGrow – Business Projections

- Key assumptions (derived from market test)
 - USD 20 ad cost to sell starter package (USD 5 after FDA approval)
 - 25% customer conversion after trial (30% after FDA approval)
- Operational Performance in Year 6 (no FDA approval)
 - Sales growth to USD 803 million
 - Gross margin growth to 70%
 - Number of customers: 2.54 million
 - Number of vaccinated ostriches: 4,000
- Operational Performance in Year 6 (FDA approval)
 - Sales growth to USD 3.5 billion
 - Gross margin growth to 70%
 - Number of customers: 11.2 million
 - Number of vaccinated ostriches: 15,000

OstriGrow - a Good Investment

- Will be the most effective and safest product in an important market
- Will have high growth and profitability
- Will have a unique competitive advantage
 - Patents will not expire until 2038
 - On patent expiration, generic competition is unlikely, because it will be impossible for competitors to acquire enough ostriches

Alessio Fasano – Founder Zonulin OstriZon

- Professor of pediatrics at Harvard Medical School
- Professor of nutrition at Harvard T.H. Chan School of Public Health
- Director of Center for Celiac Research & Treatment at MassGeneral Hospital
- Co-director of the Harvard Medical School Celiac Research Program
- Director of the Mucosal Immunology and Biology Research Center at MassGeneral Hospital for Children (50 scientists and staff)
- Director of the European Biomedical Research Institute of Salerno (EBRIS)
- Practicing outpatient clinician in pediatric gastroenterology and nutrition

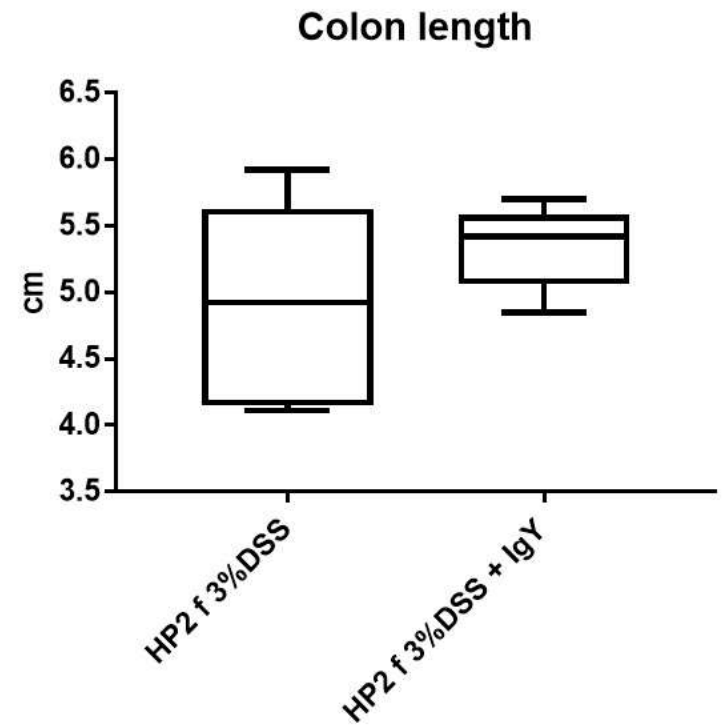
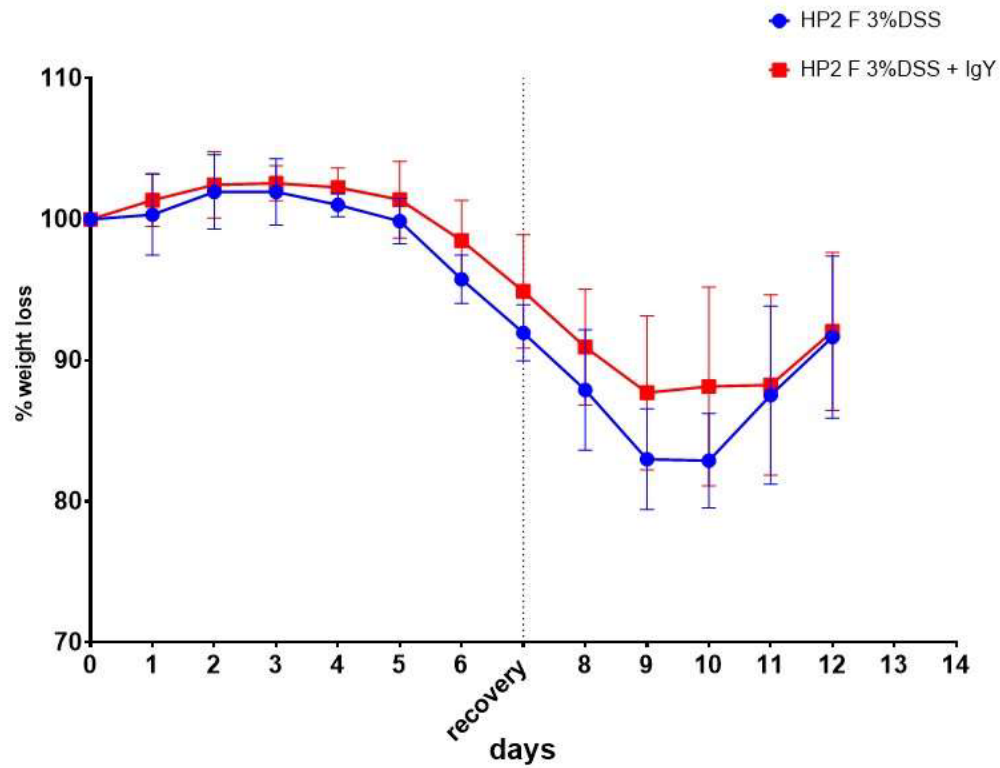
Zonulin

- A protein that increases the permeability of tight junctions between cells of the wall of the digestive tract (“leaky gut”)
- Discovered in 2000 by Alessio Fasano and his team at the University of Maryland School of Medicine
- Mammalian analog of zonula occludens toxin, secreted by cholera pathogen *Vibrio cholerae*
- Implicated in the pathogenesis of celiac disease, type 1 diabetes, and possibly other autoimmune diseases

Anti-zonulin IgY - OstriZon

- Zonulin used as antigen to create ostrich IgY
- Dr. Fasano's team at MGH has tested our antibodies with zonulin transgenic Hp2 mice ("Ztm")
- Ztm were administered dextran sodium sulfate (DSS) for 7 days, followed by 4–7 days recovery
- Zonulin impairment of the intestinal wall allows the DSS to cause profound weight loss and colitis in the Ztm.

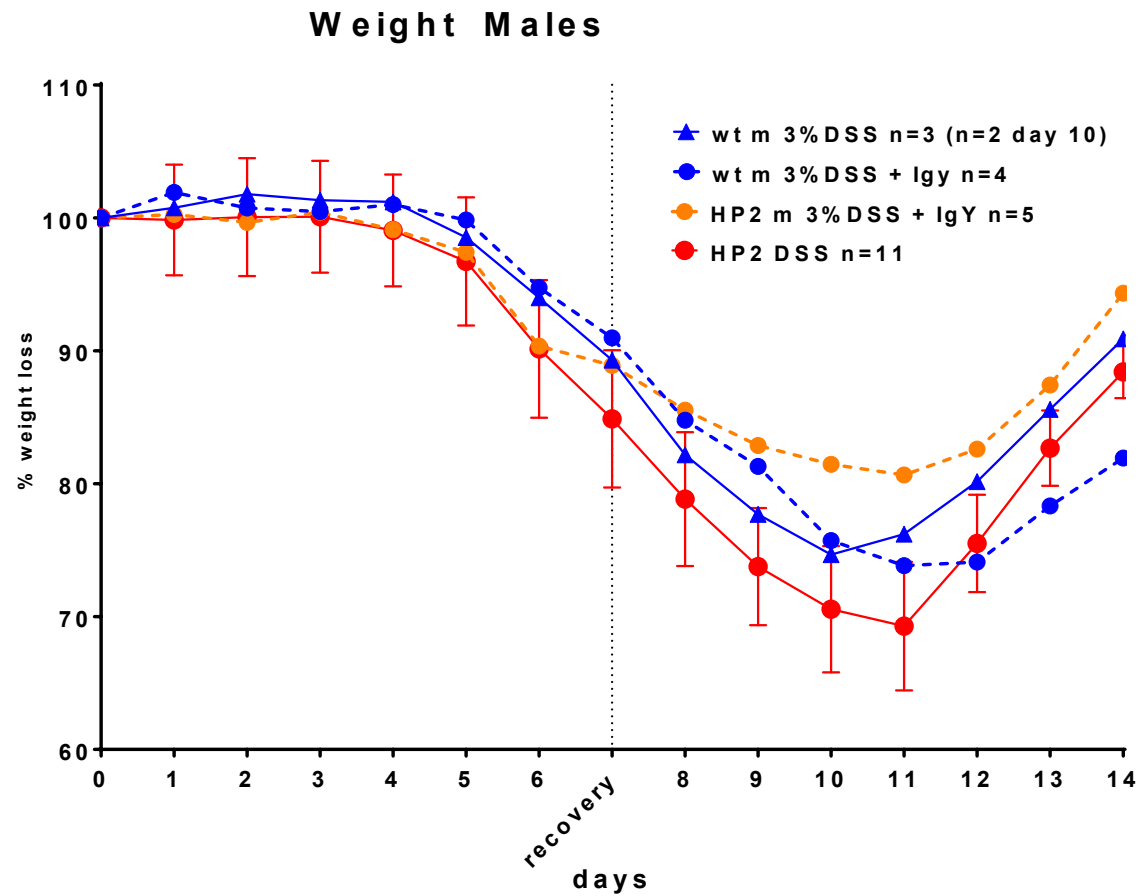
Presence of Anti-Zonulin IgY with Female Mice
 Weight loss mitigated
 Colitis reduced as shown in colon length graph



Presence of Anti-Zonulin IgY with Male Mice

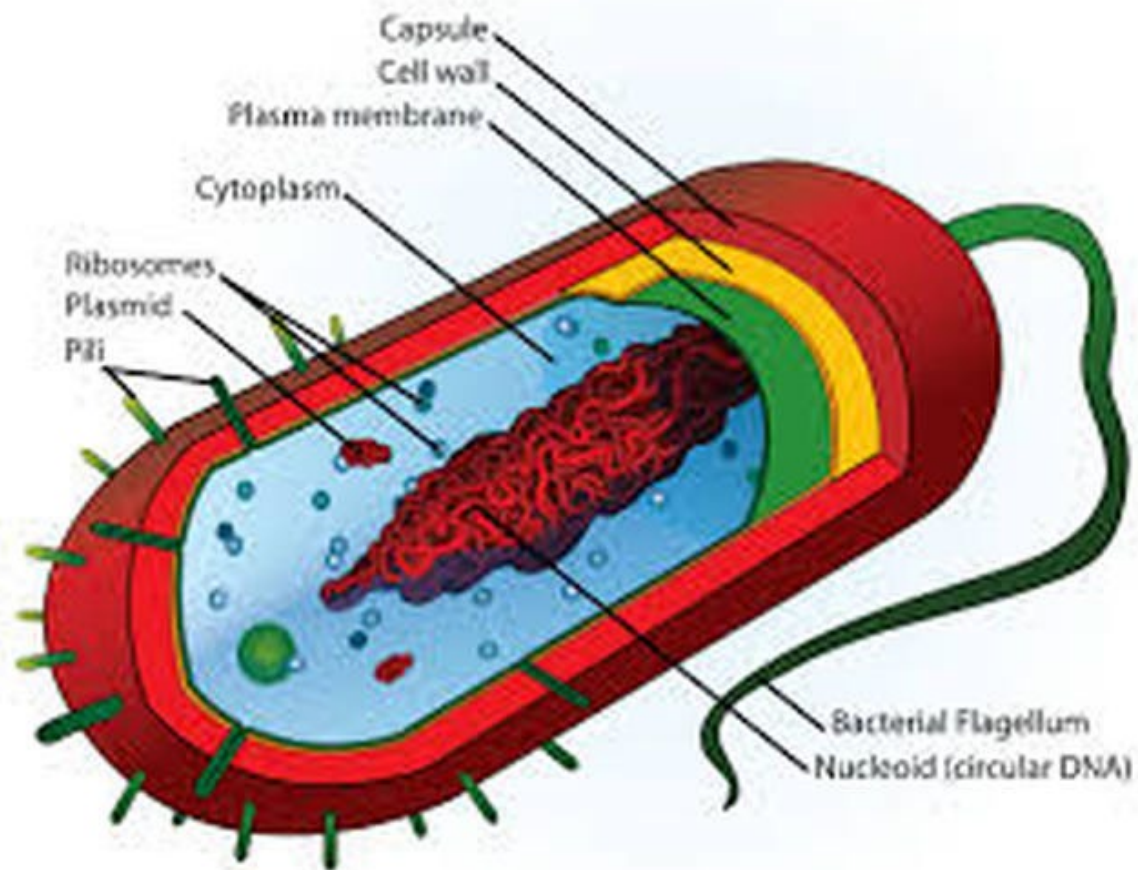
Weight loss mitigation more dramatic

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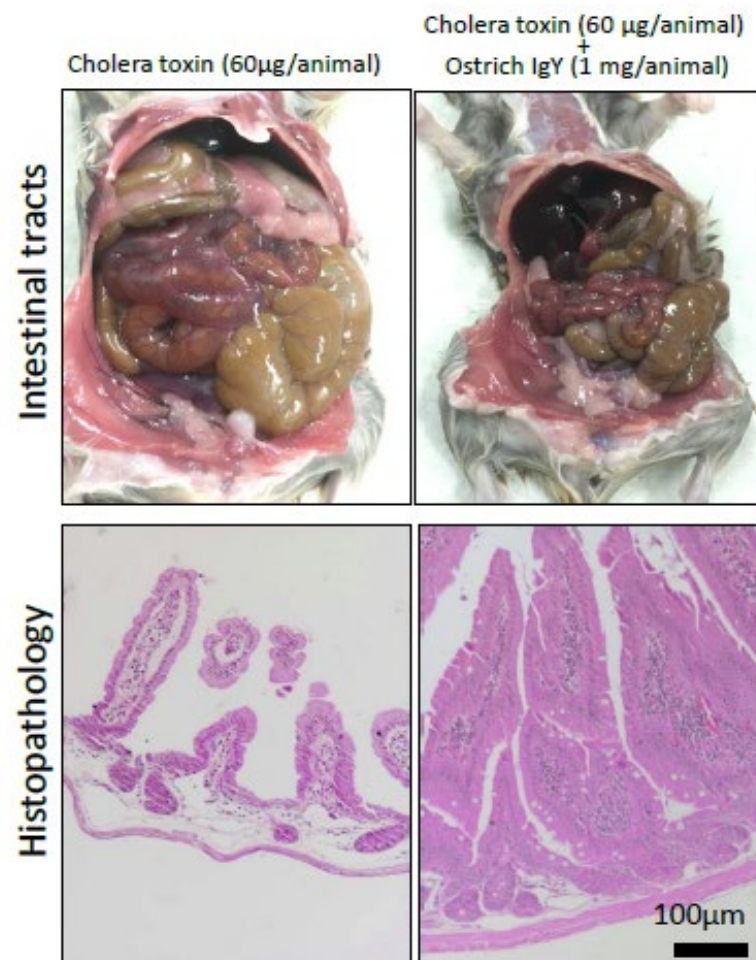
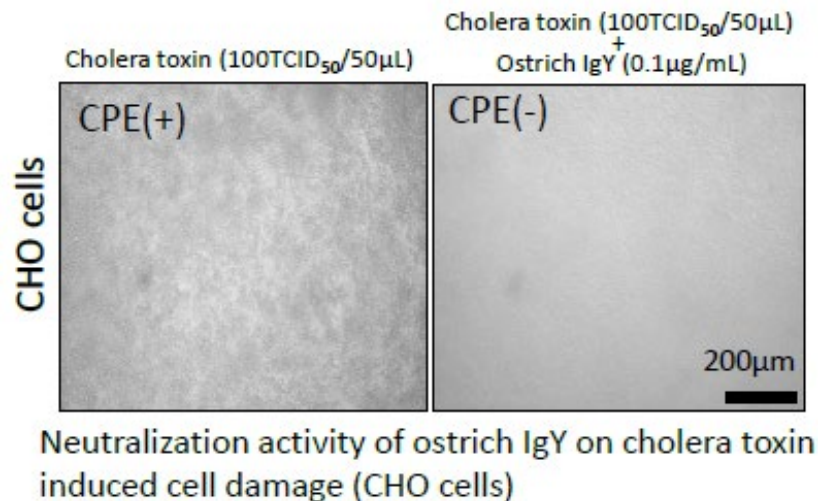


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Vibrio cholerae



Ostrich IgY Reduction of Lesions from Cholera Toxin



Hamsters were inoculated with Cholera toxin, and their GI tracts were examined 6 hours post inoculation. In the animals orally administered ostrich IgY at 10 minutes post inoculation, the intestinal lesions were clearly lessened.

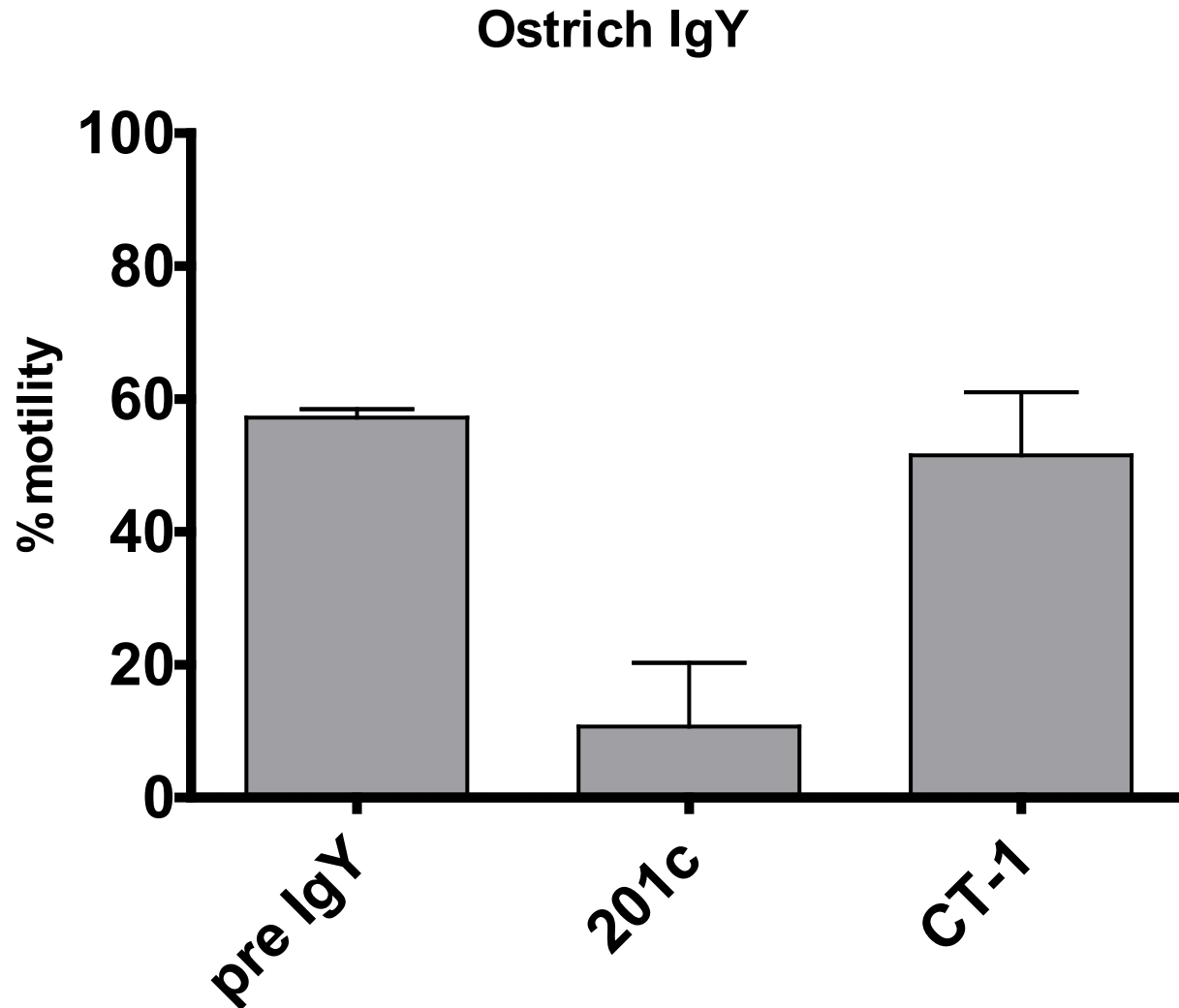
OstriChol - Dr. Edward Ryan

- Director of Global Infectious Diseases, Massachusetts General Hospital
- Professor of Medicine, Harvard Medical School
- Professor of Immunology and Infectious Diseases, Harvard T.H. Chan School of Public Health
- President of the American Society of Tropical Medicine & Hygiene (ASTMH) from 2009-2010
- Currently chairing the Standards and Treatment Guidelines Committee of the ASTMH

Ryan Laboratory at MassGeneral - Ostrichol

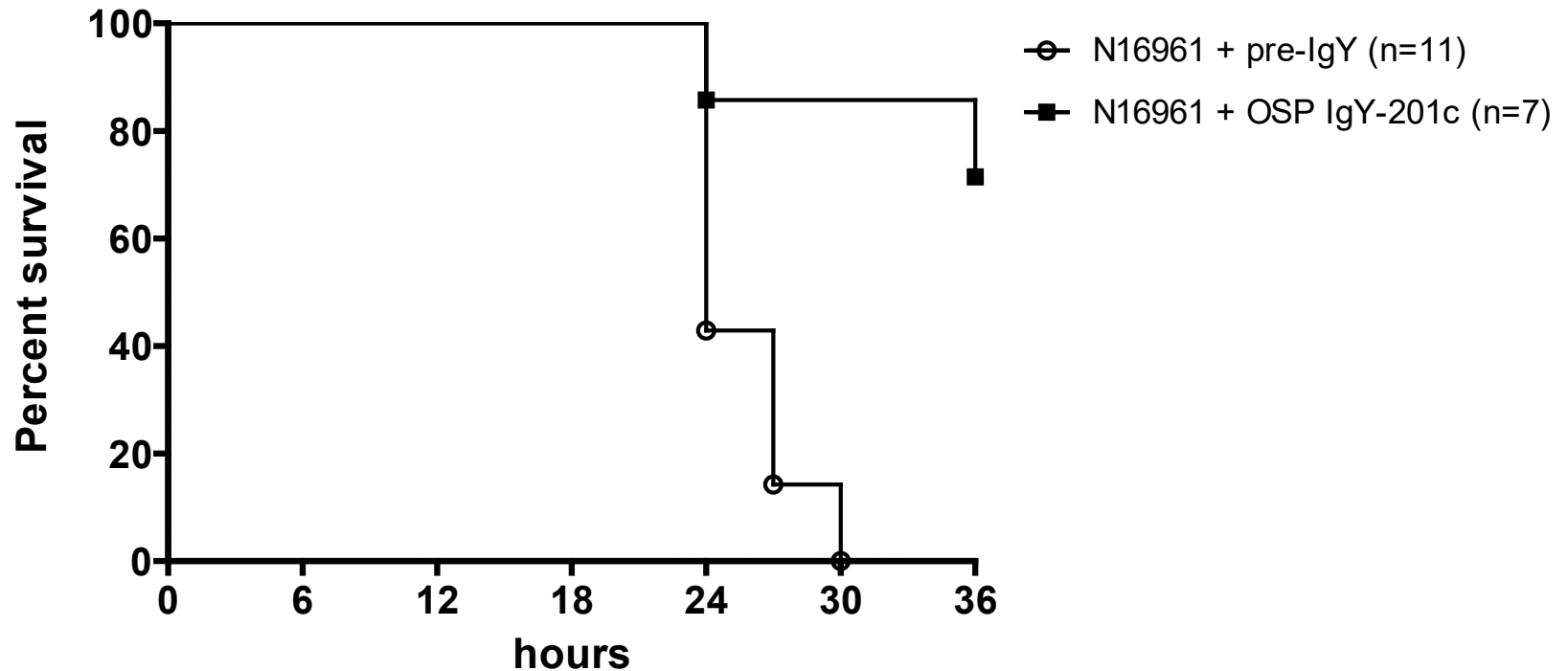
- Research on host-bacterial pathogen interactions and immune responses, with a particular focus on the development of vaccines against enteric infections
- Specific targets:
 - *Vibrio cholerae*
 - *Salmonella enterica* (typhoid fever)
- Collaborate with researchers at the International Centre for Diarrhoeal Disease Research (ICDDR) in Dhaka Bangladesh
- Producing an improved cholera vaccine - OSP conjugate

Ostrich anti-OSP IgY (not anti-CT) IgY blocks *V. cholerae* motility



Giving oral anti-OSP IgY protects against wild type *V. cholerae* challenge in mice

Survival Curve



Struthio's
Immediate Focus
Advancing
Health with
Innovative, and
Curative Products

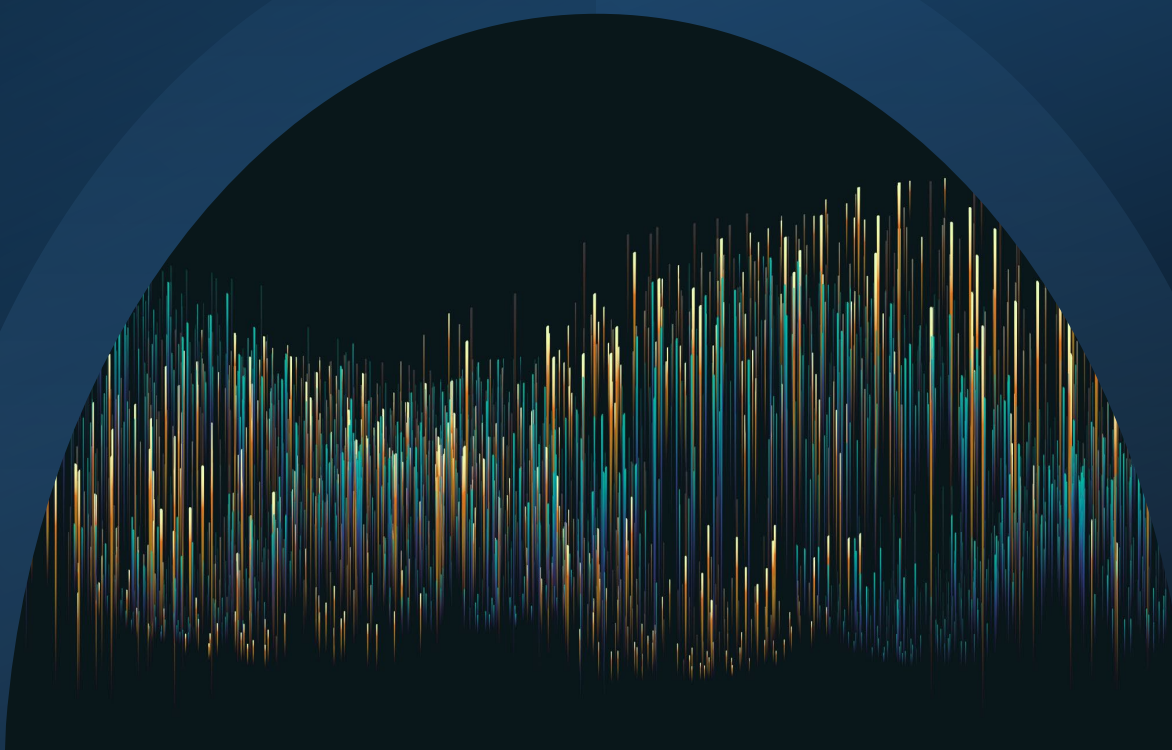
- **OstriGrow** - Enhancing Hair Health and a Curative⁶⁹ for Hair Loss
- Antibody for hair improvement use" to address hair loss (Alopecia) and improve scalp health.
- **OstriTrim** - Digestive Health Nutraceutical
- Digestive Enzyme Antibody:
 - - Patent technology to produce antibodies that target digestive enzymes. These could be used to manage conditions such as obesity by interfering with the digestion and absorption of certain nutrients. Benefits for Diabetics to lower blood sugar and cholesterol.
- Gastrointestinal Product Development
 - **OstriZon** – (anti-Zonulin) – Curative Product IBS
- A pioneering treatment tested for IBS (Irritable Bowel Syndrome) management which currently has no effective treatment
 - According to WHO – affects 10-15% of the world population
- **Dr. Tsukamoto currently sells some of his IgY products in Japan with annual sales of \$190,000,000 CAD.**

Struthio Bioscience

Large-Scale IgY Production

Extraction, purification of IgY

Product Sales





Ostrich Satellite Farm Network

Board of Directors

- **Chairman – Dr. Yasuhiro Tsukamoto**- President of Kyoto University, Founder and Scientist of Ostrich IgY patents,
- **CEO – Interim - Dave Bilinski** - Presently recruiting for full time position - Production Expert for Ostrich, 31 Years experience
- **VP – IgY Egg Production - Karen Espersen** -, IgY Egg Production Expert for Ostrich, Director Alberta Ostrich Association, 33 Years experience
- **VP Product Development - Dr. Stu Greenberg** –, CEO Ostrich Pharma USA,
- **Board Member - Dr. Lyle Oberg** – Presently Chairman of Alberta Health Services.
- **CFO** – Actively recruiting for position
- **CMO - Carol Epstein, M.D.** .Dr. Epstein has been in the biopharmaceutical industry for over 25 years. She has served as Chief Medical Officer of IRX Therapeutics, Inc
- **Board Member** – To be chosen by investor

Struthio BioScience Inc.

Advisory Board

- **Dr. Alessio Fasano**- Director of Center for Celiac Research & Treatment at MassGeneral Hospital. Director of the Mucosal Immunology and Biology Research Center at MassGeneral Hospital for Children (50 scientists and staff). Founder of Zonulin.
- **Dr. Meer Janjua** - BioNektar Inc. Founder and Chief Medical Officer, International Distribution management through Doctors network
- **Dr. Willian Bithoney MD, FAAP** - Dr. William Bithoney is an experienced healthcare professional with more than 35 years of experience in the healthcare sector having served as a physician executive in diverse academic and hospital systems.
- **Dr. Elma Hawkins, Ph.D.** – Dr. Hawkins’s 30-year career encompasses pioneering efforts in biotechnology and drug development, and executive roles in corporate development, strategy, fundraising, and general management.
- **Hassan Hassan** = Business Development – CEO of Aim-X Canada. Dedicated International Entrepreneur in Natural Resource Exploration & Sustainable Development
- **Ken Davidson , CPA, CA, CFP, ICD.D** -Ken Davidson is an accomplished corporate director, consultant, entrepreneur, Chartered Professional Accountant (CPA) and certified Corporate Director (ICD.D) with over 30 years of experience in a diverse range of industries across Canada, the US and the Caribbean.

Complete Financials

Complete Financials are attached on another slide deck

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