

# BOARD OF HEALTH

## Special Meeting

Town of Nantucket

16 Broad Street

Nantucket, Massachusetts 02554

[www.nantucket-ma.gov](http://www.nantucket-ma.gov)



**Commissioners:** Malcolm MacNab, MD, PHD, (chair), James Cooper (Vice chair), Helene Weld, RN, Stephen Visco, Rick Atherton

**Staff:** Roberto Santamaria, Artell Crowley, Kathy Lafavre, Hank Ross, Anne Barrett

~~ MINUTES ~~

**Monday, June 6, 2016**

4 Fairgrounds Road, Community Room – 2:00 pm

Called to order at 2:04 p.m.

Staff in attendance: R. Santamaria, Health Director; A. Crowley, Assistant Health Director; T. Norton, K. Lafavre, Inspector; H. Ross, Inspector; Town Minutes Taker

Attending Members: Malcolm MacNab, MD, PhD; Helene Weld, RN; Rick Atherton, Board of Selectmen

Absent Members: James Cooper; Stephen Visco

Agenda adopted by unanimous consent

### I. PUBLIC COMMENTS – ANY MEMBER OF THE PUBLIC MAY ADDRESS COMMISSIONERS AT THIS TIME

1. None

### III. ANTI-LYMES DISEASE STRATEGIES USING TRANSGENIC MICE

1. Presentation by Dr. Kevin Esvelt

Sitting MacNab, Weld, Atherton

Documentation PowerPoint® presentation.

Public Dr. Tim Weld, MD

Ernie Steinauer

Richard Ray

Dr. Tim Lepore, MD

Sam Telford, SD, Professor of Infectious Disease and Global Health, Tufts University

Larry Lecain, 347 Madaket Road

Janice Connington, Herbalist

Dave Gagnon, Executive Director Maria Mitchell Association

Jim Lentowski Nantucket Conservation Foundation

Presentation/**MacNab** – Introduced Dr. Kevin Esvelt, MIT, PhD.

Discussion **Esvelt** – The intent of the proposal is to prevent tick-borne diseases through an ecological solution. Explained the idea is to introduce mice resistant to the pathogen into the environment to prevent infected ticks. Explained why in his opinion a not-for-profit group would be the best element to run the program. Emphasized that this program would supplement, not replace, existing tick-borne disease programs. Explained the community’s relationship to the pilot program. Reviewed the cycle of tick-borne diseases from mice to humans and how this program could break the cycle through creating antibody–encoding genes in mice.

**Santamaria** – Asked if the antibodies in the mouse protect the ticks as well.

**Esvelt** – Explained how that work

**Weld** – Asked about the life span of the disease in the mouse versus the tick.

**Esvelt** – Mouse life-cycle is one year reproducing every two months; tick life-cycle is two years.

Explained that there are cells in some mice that produce the antibodies to the pathogens; explained

how they would detect the best cells and pull them out and put them into a mouse that is not resistant.

**Dr. Weld** – Asked how the antibody–encoding genes would be transferred into non immune mice.

**Esvelt** – Deliver the DNA into the muscle. It doesn't integrate into the chromosome and encode the antibody cells.

**Steinauer** – Asked if this program could possibly alter the survival rate of mice.

**Esvelt** – Producing antibodies doesn't hurt the mice. There is no known example of where a human created a sickness advantage for a wild organism. Explained that the local Nantucket mice would immunized with no introduction of genes from mice from the mainland.

**Telford** – Is working with Dr. Esvelt and explained that aside from the reduction of the deer population, this is the only way to reduce the prevalence of tick-borne diseases. Explained the ticks are produced due to access to deer blood while mice carry the diseases.

**Lepore** – Having dealt with this problem this approach makes a lot of sense given the aversion to reducing the deer population.

**Santamaria** – Asked how the mice would be socialized to prevent their being eaten by predators and if there is a chance of the promoter appearing in wildlife outside the mice population.

**Esvelt** – Professor Telford is in charge of producing a large enough number of mice. A large amount of the socialization is genetic; capture mice, send them to us, they'll be interbred to be immune and released back into the wild.

**Santamaria** – Asked if the antibodies to be promoted would protect against other diseases.

**Esvelt** – It is against the specific spirochete; though it varies between species. The spirochete reproduces a lot faster than the ticks.

**Lecain** – Asked if it's possible to patent the formula for a mouse that doesn't carry any disease and can Nantucket benefit from that patent.

**Esvelt** – No; the Supreme Court ruled you can't patent anything that is a pure product of nature. What we are isolating here is a pure product of nature. The technical term is cisgenic; all the genes are from the same organism.

**Lepore** – Asked what the foreign DNA in the drive systems would be.

**Esvelt** – Explained CRISPR from Nantucket native mice would be used in Nantucket native mice; can't do that on the mainland. With the expression of interest by the Nantucket community, he is ready to start the lab work.

**MacNab** – This board needs to establish and accept the clear go no-go and safety criteria of the program before going to the first field trial. Asked about Dr. Esvelt's funding for this project.

**Esvelt** – Explained where his funding is coming from for the lab phase and Phase I field test.

**Connington** – After hearing the presentation and Dr. Esvelt's level of care, she is eager to see where this goes.

**Santamaria** – Asked if a knock-out gene might be created at the same time that might not be coupled with a potential abnormality that will influence the environment.

**Esvelt** – The insertion site based on knowledge of the mice and where their introduction would have the of least impact.

**Telford** – Emphasized that this program would not replace existing control efforts and that prevention efforts on a personal level need to be continued.

**Lentowski** – Suggested this needs a lay-man's version of that can be made available to the public.

Motion to Adjourn: 3:23 p.m.

Submitted by:  
Terry L. Norton