



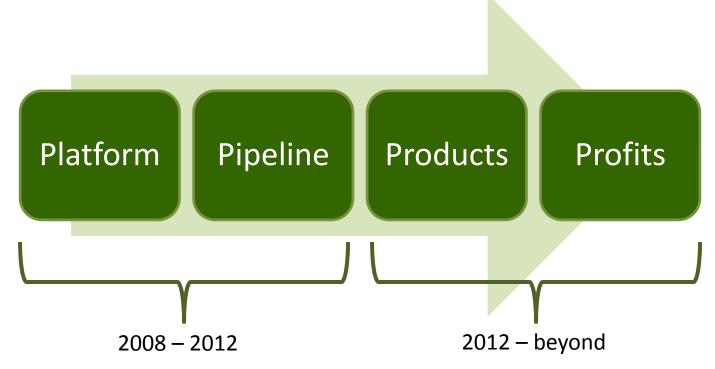


# TyraTech is a natural life sciences company, a leader in safe and effective insect and parasite control

- ❖ Proprietary technology discovered at Vanderbilt-Ingram Cancer Center
- ❖ Founded in 2004, listed on London AIM market in 2007 (LON: TYR & TYRU)
- ❖ Headquartered in Research Triangle Park, North Carolina



# TyraTech is at the commercialisation phase of developing its platforms



#### **DEVELOPMENT PHASE**

- Platform development
- Patented blends and formulations
- Clinical studies

#### **COMMERCIALISATION PHASE**

- Products registered
- Commercialisation partners
- Geographical and channels expansion

Nature's

Nature's Technology

# TyraTech's products can help control the devastating worldwide impact of insects and parasites



#### Global impact on the health of adults and children

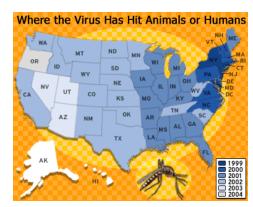
- Infections and allergies
- Transmission of diseases: Malaria, Lyme, West Nile disease ...
- Food contamination
- Impact on child development: 2bn people (mainly children) suffer parasitic infections from soil transmitted worms (WHO estimates)



Prevalence of Lyme disease (in red)

#### Global impact on animal health

- Transmission of diseases: Blue Tongue, Lyme, West Nile disease ...
- Productivity losses: ticks and tick-borne diseases in cattle cost each year globally up to \$19bn (FAO estimates\*)
- Food contamination



West Nile virus prevalence in the USA

\*Source: FAO, State of Agriculture, 2009

## TyraTech's novel insect control products answer a real market need



#### **Existing products (pesticides) suffer from performance and safety issues**

- It is estimated that close to 1000 species of pests have evolved a resistance to a pesticide
- Most pesticides pose some risk of harm to humans, animals or the environment\*
- These issues have led to drastic reductions in the use of synthetic products and more stringent regulatory requirements, including bans
- In addition, most benign alternatives and natural pesticides have not delivered an acceptable level of performance



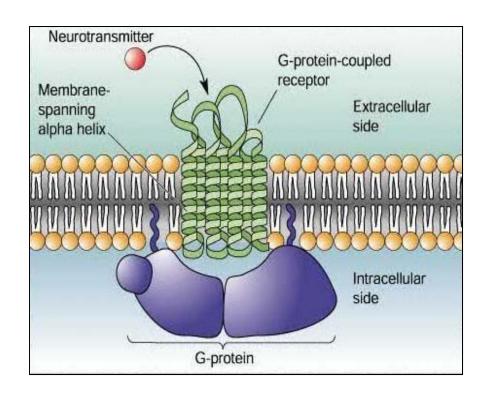
TyraTech now offers an innovative solution to these issues, where customers do not have to compromise between safety and performance

- Patented technology delivers superior efficacy, comparable or superior to synthetics
- Nature-derived ingredients ensure highest level of safety for children, animals and the environment
- Unique formulations provide quality aesthetics, cosmetics and convenience



# TyraTech's highly potent solutions target G protein coupled receptors specific to invertebrates





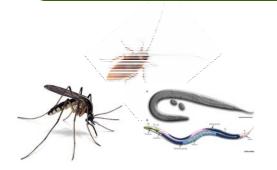
- ❖ G protein-coupled receptors are the target of approximately 50% of all modern medicinal drugs\*. R.Lefkowitz and B. Kobilka, received the Nobel prize in chemistry for 2012 for their work on understanding how GPCRs function
- TyraTech's unique screening platform focuses on the effects of oil blends on the tyramine receptor (one of these GPCRs) of insects and parasites
- This tyramine receptor is specific to invertebrates and is inactive in humans, providing a superior level of safety

<sup>\*</sup> The Royal Swedish Academy of Sciences press release for the Nobel Prize in Chemistry (2012).

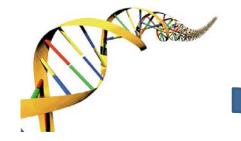


## **GPCR Mode of Action Screening**

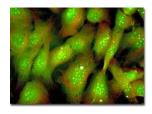




Extract RNA/DNA for GPCR genes



Insert receptor gene into animal cells



Screen compounds in fluorescence assays



Cationic liposome +
Booster peptide +
Plasmid complex

Fusion

Verify receptor protein expression by exposing cells to natural ligand (i.e. tyramine)

### TyraTech's unique product benefits



#### "A superior combination of performance, safety and convenience"

### Efficacy

- As efficacious as (or superior to) existing synthetic chemical pesticides
- Effective against resistant pests
- Scientifically proven

### **❖** Safety

- No synthetic chemical pesticides
- Superior level of safety for the environment, no residues
- No risk of food chain contamination
- Safely used in the presence of animals or children
- Safe for both topical and oral usage
- No restrictions on re-use

#### Cosmetics & Convenience

- Highly convenient: no need for professional application
- Excellent cosmetics and aesthetics (natural fragrances, non-sticky)



### TyraTech's products present a superior level of safety













- The oil blends consist of naturally occurring compounds found in a wide variety of fruits, vegetables and spices
- No adverse effects were observed in animal studies even at 100 times the dose anticipated for humans\*
- The compounds used in the Technology are widely considered safe:
  - FDA: Generally Recognized As Safe (GRAS)
  - EPA: FIFRA 25b Exempt Minimum Risk Pesticide
  - **FEMA GRAS ingredients**
  - Joint FAO/WHO Expert Committee on Food Additives (JECFA) deemed safe for flavoring use
  - The Council of Europe deemed safe for flavoring use

\*TyraTech Functional Food Technology



## Strong patent portfolio



#### Approach:

- TyraTech employs a multi-layered patent approach
- Patents protect
  - Methods for screening compounds
  - > Compositions effective against a wide range of target organisms
  - Combinations of active ingredients
- Ability to tailor portfolio to protect developing product lines and partnerships

#### Status:

- Patents granted
  - > 3 granted U.S. patents and 11 granted international patents
- Patent applications pending
  - > 15 patent families, comprising 85 applications, being prosecuted in 19 countries

## TyraTech will focus initially on three major segments for a total addressable market of \$9.5bn - \$12.5bn\*



#### **Personal Care**

### Animal health

- **Pesticides**
- ENVANCE TECHNOLOGIES,

- Head Lice
- Repellent
- Functional Food



Market size

\$1bn - \$2bn\*

- Production animal facilities
- Repellent
- External parasites
- Internal parasites



Market size \$5bn - \$6bn\*

- Aerosols
- ❖ Tech Dust
- Drain Fly





Market size \$3.5bn – \$4.5bn\*

POWERED BY TYRATECH

Note:1. Envance Technologies, LLC is a joint venture between TyraTech, Inc. and AMVAC; 2.\* Management estimates



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### **Summary and Outlook**



#### TyraTech's products provide solutions to a global problem

- Technology delivers products with efficacy proved to be as good or superior to the synthetic products currently in the market today without the safety issues
- Solutions are natural and non-toxic with resultant safety benefits acknowledged by global regulatory bodies
- Addressing market segments with a combined value of between \$9.5bn and \$12.5bn\*

#### TyraTech has products in the market or ready to be commercialised

- 6 pesticide products already in the market (retail and professional) at The Home Depot and other outlets through Envance Technologies
- 2 personal care products are registered and ready to be sold (Repellent, Head Lice)
- 6 animal health products ready to be sold for production animal premises

#### TyraTech has laid the foundation for fast-paced sustainable growth

- Strategic objective to segment the market and expand in various distribution channels
- Significant product pipeline in place
- Geographical Expansion across fast-growing BRIC countries where insects and parasites are a major problem



\*Management Estimates

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