



Portable Tick-borne Pathogen Test

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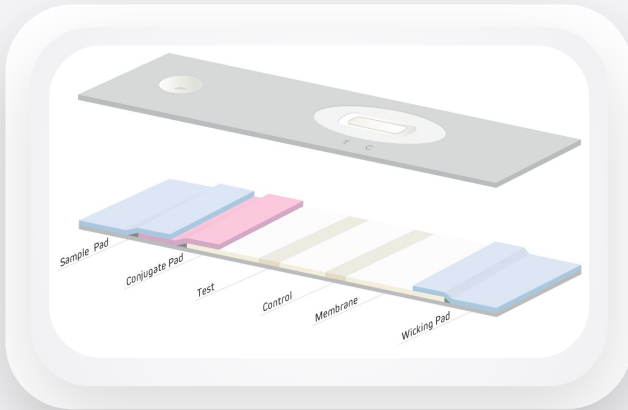
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**Strengths &
Challenges**

Product Description

A **self-testing (ELISA) kit** that can detect multiple **tick-borne diseases** within a tick simultaneously, regardless of the user's location.

Detects the presence of **Lyme Disease** (*Borrelia burgdorferi*) and **Rocky Mountain Spotted Fever** (*Rickettsia rickettsii*)



<https://www.jacksonimmuno.com/technical/products/applications/elisa/lateral-flow/immunoassays-introduction>



Product Description



Value Proposition

Value Propositions



What value do we deliver to the customer?

Which one of our customer's problems are we helping to solve?

Which customer needs are we satisfying?



Reduce instances of **delayed treatment** and help **prevent long-lasting negative impacts** to health associated with undiagnosed tick-borne diseases.

Design, Accessibility, Usability, High Sensitivity  **Peace of Mind**

Customer Segments

Customer Segments



For whom are we creating value?

Who are our most important customers?



Segmented Customer Segment

Primary Target Audience - Outdoor Enthusiasts (hikers, campers, etc.)

Secondary Target Audience - Pet owners (dogs and cats)

Market Sizes



Human Health

Self-Testing Diagnostics

\$11.4B in 2024

U.S Camping & Hiking

\$8.6B in 2024

People Who Come in Contact With Ticks

31M (estimated in 2024)



Animal Health

Veterinary Diagnostics

\$10.7B in 2024

Veterinary Rapid Test

\$820M in 2024

US Households With Pets (Dog or Cat)

100M (estimated in 2024)



Competitor Analysis



Major Issue with
test sensitivity!



Direct

- Mail-in Tick Tests (Cutter)
- **CarePlus Tick Test**

Indirect

- Lab-based tick tests
- Tick preventatives
- Pfizer Lyme Vaccine

Customer Channels

Customer Channels



Through which channels do our customer segments want to be reached?

How are we reaching them now?

Which ones work best?

Which ones are most cost-efficient?

How are we integrating them with customer routines?



- **Direct Sales**
 - Outdoor recreation stores
 - Pet stores
 - Pharmacies
- **E-commerce**
 - Amazon
 - Chewy
- **Web Marketing and Social Media**
 - Educational content
 - Advertisements
- **Word of Mouth/Communities**
 - Search engine optimization
 - Website reviews/testimonials

Customer Relationships

Customer Relationships



What type of relationship does each of our customer segments expect us to establish and maintain with them?

Which ones have we established?

How are they integrated with the rest of our business model?

How costly are they?



Essential for customers to have **confidence** in Detickt's **performance**, **self-serving capabilities**, and **impact**.

Key Resources

Key Resources



What key resources do our value propositions require?



What's needed?

- Personnel
 - Marketing
 - Science
 - Finances
- Facilities
 - Operations
 - R&D
 - Manufacturing
- Finances
- Intellectual property

Key Partnerships



Manufacturing: CDMO/CRO

- Whole kit production
- Antibody production
- Assembly/packaging

Funding

- Angel investors
- Venture capital
- University resources (ORC, WIN)

Key Partnerships



Strategic Partnerships

- National Parks Service
- Scouting America
- Center for Disease Control

Distribution

- Dick's Sporting Goods, REI, ORVIS, Bass Pro Shops
- CVS, Walgreens
- Amazon, Walmart



Strategic Partnerships

- American Veterinary Medical Association
- Idexx
- Antech Diagnostics
- Animal shelter

Distribution

- Retail: Petsmart, Petco
- Online: Chewy

Key Activities as a 5 Year Timeline

Prelaunch and Ideation Phase

- Business Operations
- Product Development
- Branding and packaging
- Intellectual Property
- Initial Funding/Grants

Final Product Development and Market Preparation Phase

- Final Testing
- Distribution Preparations
- Detickt Awareness and
Prelaunch
- Series A funding

Scaling and Expansion Phase

- Post Market Surveillance
- Infrastructure Growth
- Market Expansion
- Series B Funding
- Strategic Partnerships



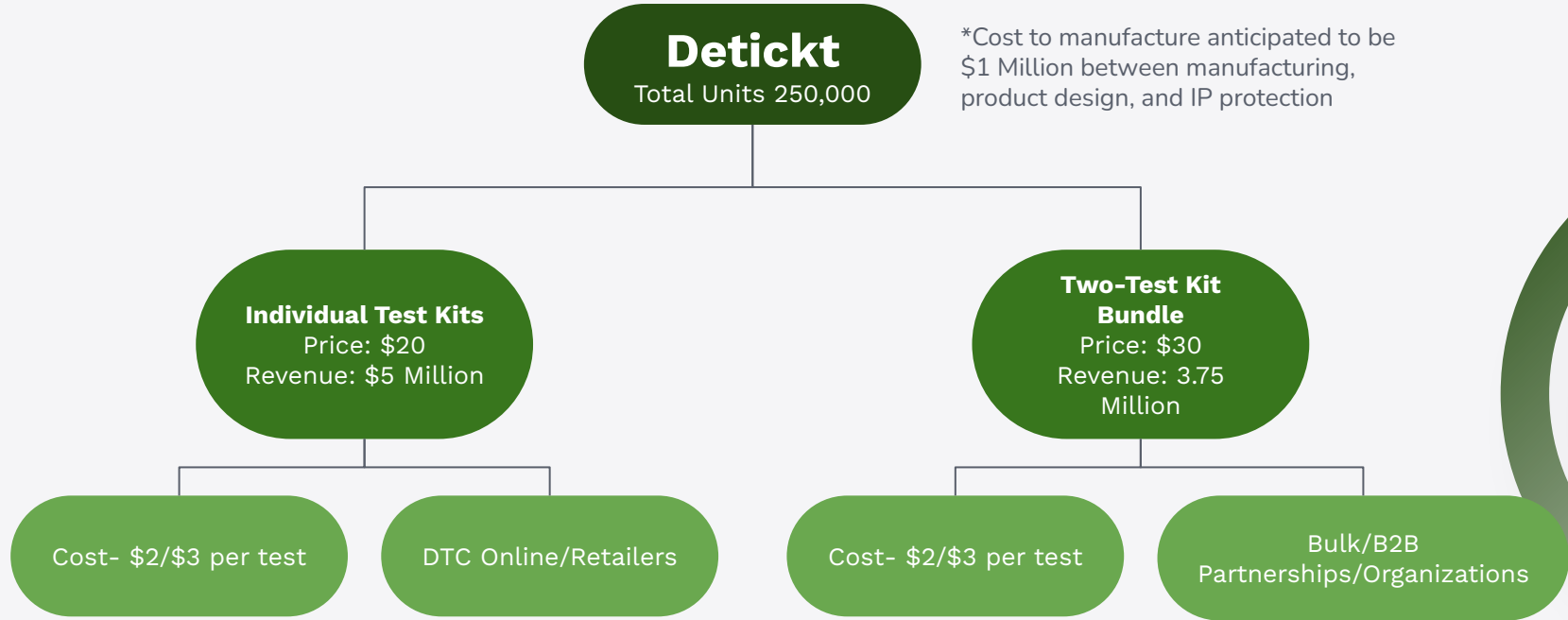
Product Development Phase

- Outsourcing Prototype and Quality Assurance Testing
- Platform Creation and Business Networking
- Pre Seed Round Funding
- **Aim to reach 1.5 Million in Funding to cover operations**

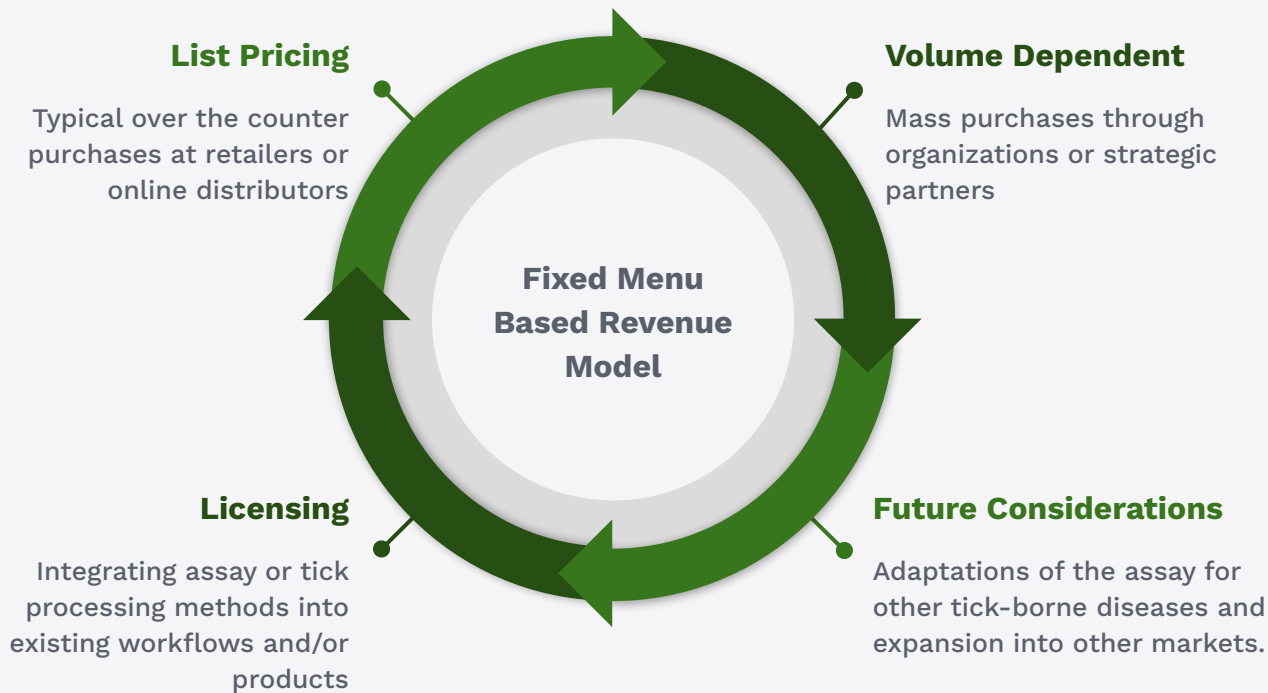
Go-to Market Phase

- Launch Strategy
- Customer Acquisition and Support
- Detickt Awareness and Content
- Revenue Begins
- Strategic Funding

Cost Structure and Payment Flow



Revenue Strategy



Detickt Survey 1 Results- Outdoor Enthusiasts

Demographics

- Large sample size
- Majority women
- 204 complete responses

Tick Prevention and Awareness

- Majority remove ticks immediately
- Overwhelming majority have concern about tick-borne diseases

Outdoor Activities and Tick Interactions

- Wide variety of activities
- Majority either had no bites or 1-2 bites in the past year

Detickt/Test Kit Specific Interest

- 80% majority likely to use it
 - 47% extremely likely
- No preference in format, followed by lightweight



Detickt Survey 2 Results- Pet Owners

Demographics

- Smaller sample size
 - 51 complete responses
- 35% of Survey Takers were 26-35 Years old

Tick Prevention and Awareness

- Tick Prevention is a **common interest**
- Ticks on pets are a known issue
- Most Individuals **immediately** remove a tick when found



Attitudes Towards Pet Health Products

- Most individuals were interested in using health products for their pets
- **Preference for online distributors like Amazon, Chewy, etc**

Detickt/Test Kit Specific Interest

- No preference in packaging
- Format preferred is small to medium sized
- Most are **somewhat likely** to use a test kit

KOL Feedback



Joe Larsen, Ph.D
*Kensington Street
Consulting*



Leslie Lewis, MMB
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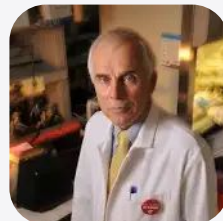
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Galaxy Diagnostics



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Veterinary Medicine*

Mentor Feedback



Sue Carson
NCSU MMB
Director



Meaghan Nappo
NCSU MMB
Assistant Director



Gaurav Shah
MMB Capstone
Mentor



**Industry Panelists
and Mentors**

Version 1 - Business Model Canvas



Version 2 - Business Model Canvas

Key Partners



National Parks

- Commercial Use Authorization, corporate partnerships

Scouting America

- Regional partnerships, educational programs

Center for Disease Control

- Public-Private partnership, product contract

Funding and Networking

- RTP Capital, Triangle Angel Fund, Hatteras Venture Partners, KdT, Coddle Creek
- NC State ORC, WIN

Manufacturing and Distribution

- CDMO/CROs to outsource manufacturing
- Pharmacies (primary), outlet stores (secondary)

Key Activities



Pre Launch

- Operations, Licensing, Development and IP Protection

Product Development

- Prototype, Production and testing, digital platform development

Go-To Market

- Sales and Customer Acquisition, Marketing and brand awareness, and Operations and scaling

Key Resources



Personnel

- Appropriate staffing

Facilities

- On-site development
- Offsite development

Finances

- Loans, grants, investments

Intellectual Property

- Patent filing via patent lawyer

Value Propositions



Those who come in contact with ticks

- Reduce delayed treatment
- Prevent long-lasting health impacts

Design, Accessibility, and Usability, High Sensitivity

Detects Lyme Disease and Rocky Mountain Spotted Fever

Customer Relationship



Confidence

- Performance
- Self-service

Education

- Awareness
- Tick-borne diseases

Customer Segments



Outdoor Enthusiasts

- Primary
- High risk to contact ticks
- Hikers, campers, etc

General Users

- Secondary
- Next highest risk
- Pet owners, workers, etc

Channels

Direct Sales:

- Outdoor Recreation stores

Web Marketing:

- Social Media
- Educational content

Word of Mouth:

- Outdoors communities
- Testimonials
- Online reviews

Cost Structure



What are the most important costs inherent in our business model?
Which key resources are the most expensive? Which key activities are the most expensive?

Revenue Streams



Fixed Menu Pricing

- List pricing
- Volume dependent pricing

Version 3 - Business Model Canvas

Key Partners

Strategic partnerships for building awareness

National Parks

- Commercial Use Authorization, corporate partnerships

Scouting America

- Regional partnerships, educational programs

Center for Disease Control

- Public-Private partnership, product contract

Funding and Networking

- RTP Capital, Triangle Angel Fund, Hatteras Venture Partners, KdT, Coddle Creek

Manufacturing and Distribution

- CDMO/CROs to outsource manufacturing
- Pharmacies (primary), outlet stores (secondary)

Veterinarians & Animal Shelters

- Commercial Use Authorization, corporate partnerships

Key Activities

5 Year Timeline Phases

- Pre Launch and Ideation
- Product Development
- Final Product Development and Market Preparation
- Go-to- Market
- Scaling and Expansion

Key Resources

- Personnel**
 - Appropriate **staffing**
- Facilities**
 - On-site development
 - Offsite development
- Finances**
 - Loans, grants, investments
- Intellectual Property**
 - Patent filing via patent lawyer
 - Lateral flow assay & processing methodology

Value Propositions

Those who come in contact with ticks

- Reduce delayed treatment
- Prevent long-lasting health impacts

Design, Accessibility, and Usability, **High Sensitivity**

Detects Lyme Disease and Rocky Mountain Spotted Fever

Customer Relationship

Confidence

- Performance
- Self-service

Education

- Awareness
- Tick-borne diseases

Channels

Direct Sales:

- Outdoor Recreation stores
- **Pet stores**
- Pharmacies
- E-commerce

Web Marketing:

- Social Media
- Educational content

Word of Mouth:

- Outdoors communities

Distributors:

- Chewy & Amazon

Customer Segments

Outdoor Enthusiasts

- Primary
- High risk to contact ticks
- Hikers, campers, etc

Pet Owners

- Secondary
- Alternative market
- Pet owners (Dogs and Cats)
- Testing ticks removed from animals

Cost Structure

Cost-driven

- Personnel
- Development and manufacturing
- **Competitive-edge**

Revenue Streams

Fixed Menu Pricing

- List pricing
- Volume dependent pricing
- **Licensing**

Summary



Strengths

Feasibility

- Simple scientific concepts
- Low market competition

Desirability

- High interest from consumers

Sustainability

- Disease-dependent product variation
- Multiple market entry



Challenges

Major Hurdles

- Tick processing
- Funding
- Customer awareness

Sustainability

- Challenging if limited use



Strategies

- Cost-sensitivity
- Prioritize personnel for tick processing methods
- Marketing and education
- Strategic partnerships for customer awareness (scouts)

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Thank You!
Questions?

Competitive Advantage

Previous Standard

CarePlus Tick Test

Issues with test sensitivity

Required $5 \cdot 10^5$ spirochetes

↑ Test Sensitivity

Current Standard

Mail-in Tick Tests

3 - 5 days for results

Claim 99% accuracy

↓ Turn-around Time

Expected Standard

COVID-19 Tests

Ease of use and interpretation

■ Ease of use

Detickt

Detickt Outdoor Enthusiasts Survey

Detickt Outdoor Survey Topic	Highest Percentage Answers (Out of 204 Total Responses)
Age range	26%- 55+ Years old
Gender Identity	71%- Female
Types of Outdoor Activities (select all that apply)	Range of activities, some fill in the blank answers. From list provided 82% chose Hiking.
Engagement of Outdoor Activities	44%- Extremely Often (Multiple times a week)
Frequency of tick bites within the past year	64%- 0 Times
Removal of Tick	64%- Immediately remove the tick when found
Concern of Tick Borne Disease	34%- Moderately Concerned
Likeness of using Detickt Test kit	47%- Extremely Likely
Practicality of Test kit size	42%- Small package with 1 test 48%- Medium package with 2 tests
Preference of Test kit material	55%- No preference Other answers provided- Durable, Lightweight, Environmentally Friendly.



Detickt Pet Survey

Detickt Pet Survey Topic	Highest Percentage Answers (Out of 51 Total Responses)
Age range	35%- 26-35 Years old
Type of Pet owned	73%-Dog
Use or Not of Tick Prevention Methods for Pets	68%- Yes, Regularly
Interest in Using Health Related Products for Pets	39%- Somewhat Interested 47%- Very Interested
Types of Outdoor Activities	Range of Activities 71%- Walking or Jogging 85%- Playing in the Backyard
Frequency of Outdoor Activities	43%- Extremely Often (Multiple Times a week)
Frequency of Ticks on Pets in Past Year	56%- 0 Times
Removal of Tick	63%- Immediately remove tick when found
Concern of Tick-Borne Disease	38%- Slightly Concerned
Likeness of Using Detickt Test Kit	45%- Somewhat Likely
Ideal Packaging Material	57%- No preference Other- Lightweight, Durable
Practicality of Test Kit Format	45%- Small package with 1 test for \$20 43%- Medium package with 2 tests for \$32
Preference for Purchasing Detickt	57%- Online (Amazon, Chewy, etc)



Cost Structure

Revenue Streams



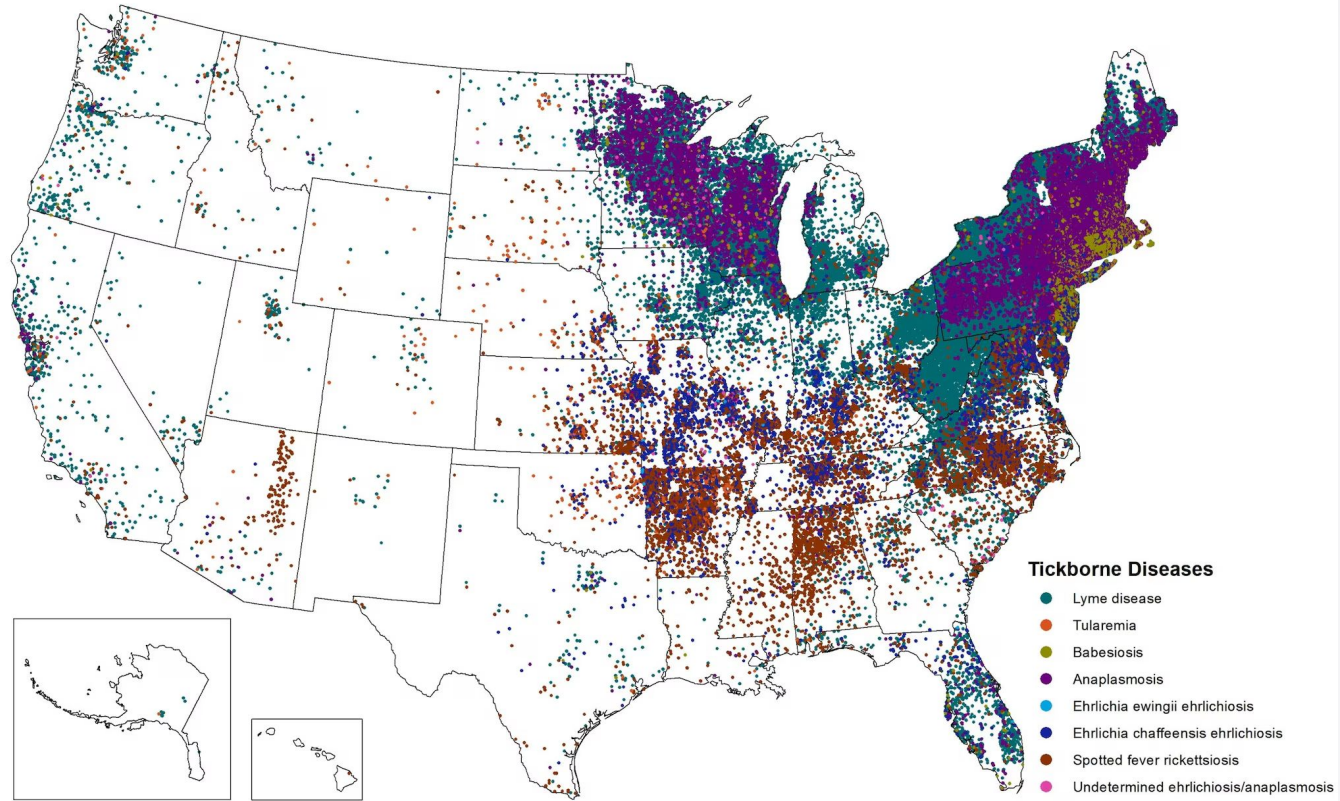
For what value are our customers really willing to pay? For what do they currently pay? How are they currently paying? How would they prefer to pay? How much does each revenue stream contribute to overall revenues?



Pricing Tactics

- Total Units to be produced: **250,000**
 - Cost to outsource manufacturing and product design estimated to be between \$500,000 to \$750,000
- Price per test: \$15-\$20
 - Based upon survey percentages
- Revenue Range in Year 5
 - Individual Test kits at \$20: **\$5 Million**
 - Test kit with 2 tests at \$30: **\$3.75 Million**

Additional Resources



Note: Powassan data not represented on the map. Babesiosis data incomplete for years shown.

<https://www.cdc.gov/ticks/data-research/facts-stats/geographic-distribution-of-tickborne-disease-cases.html>