

Tagging and Tracking Small Laboratory Animals with Light-activated Microtransponders (p-Chips)

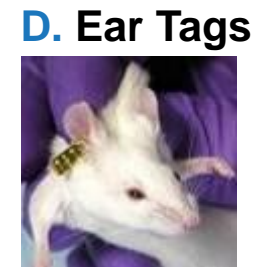
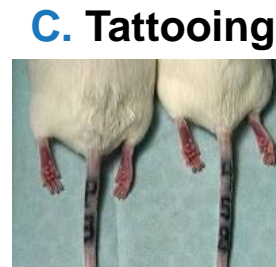
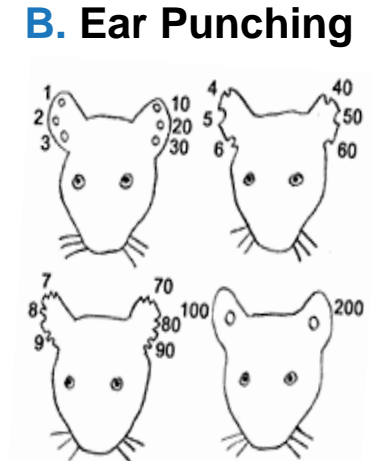
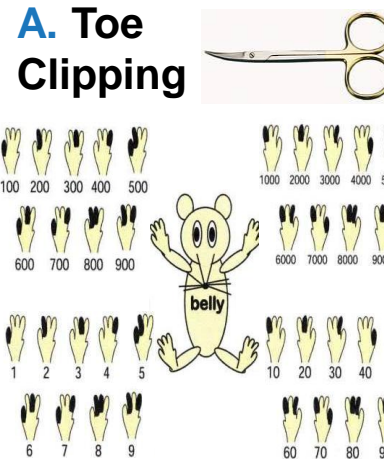


Maryann Gruda

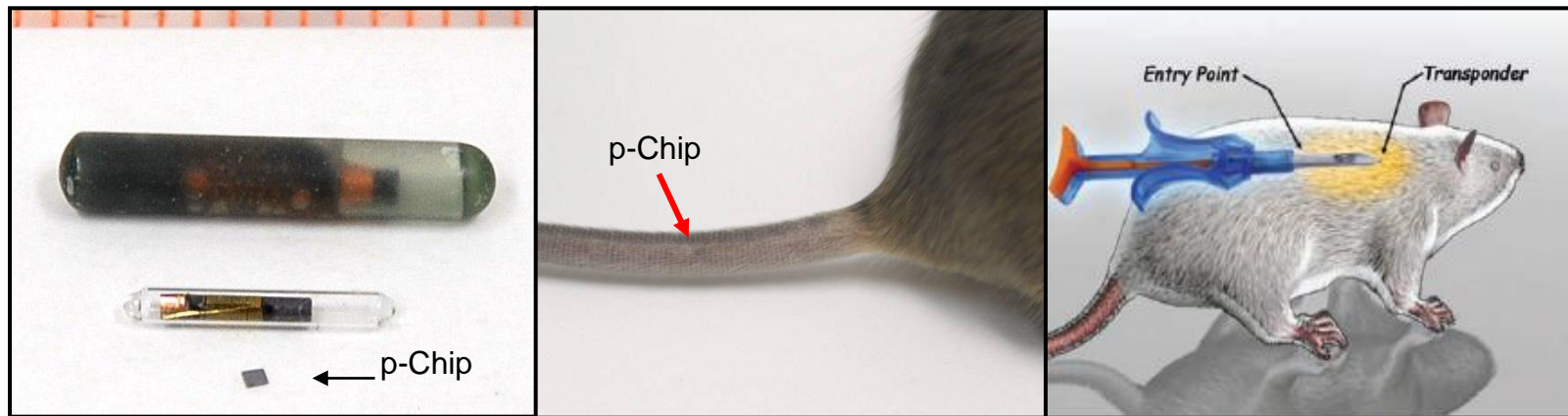


Problem: Current Methods for Tagging Laboratory Mice Not Desirable

- Manual data entry
- Restrictions on use
- Mistakes and lost time due to unclear markings
- Tags unreliable
- No chain-of-custody during animal transfers



Problem: Current Methods for Tagging Laboratory Mice Not Desirable

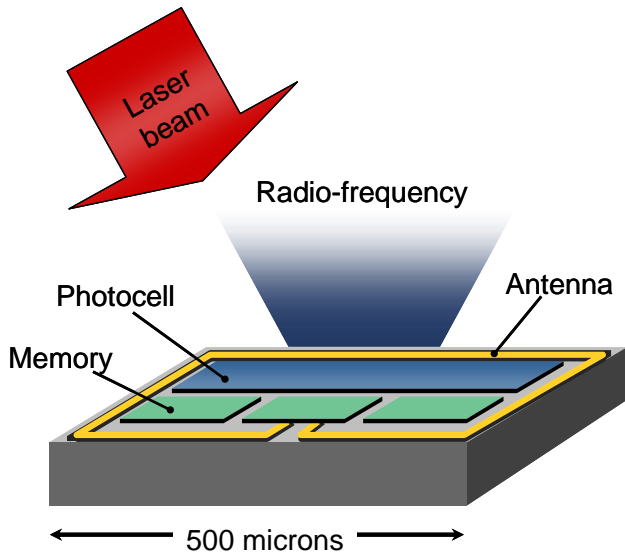


- Current glass encapsulated transponders are too expensive for routine use and often too large

“Transponder size (vol.) 1/1,400 of competitor”

p-Chip Microtransponders

p-Chips transmit a fixed and unique serial number via radio frequency signal when activated by laser light



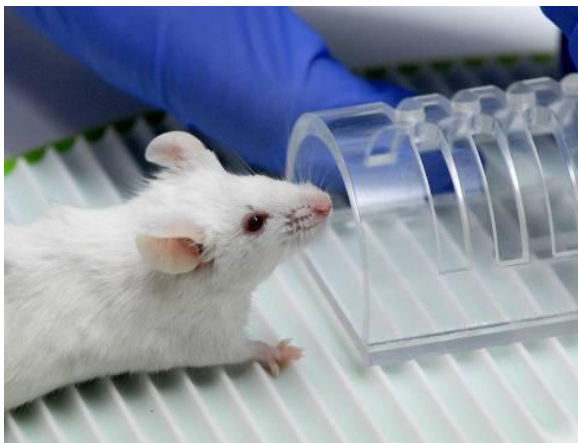
Key Features

Benefit

Integrated antenna	Low cost
Small size	Unobtrusive
Over 1 billion IDs	No duplicates
Manufactured at silicon foundry	Difficult to counterfeit
Robust	Can be used in extreme environments

Improved Approach to a Traditional Application

1. Restrain mouse



2. Inject p-Chip



3. Read the ID

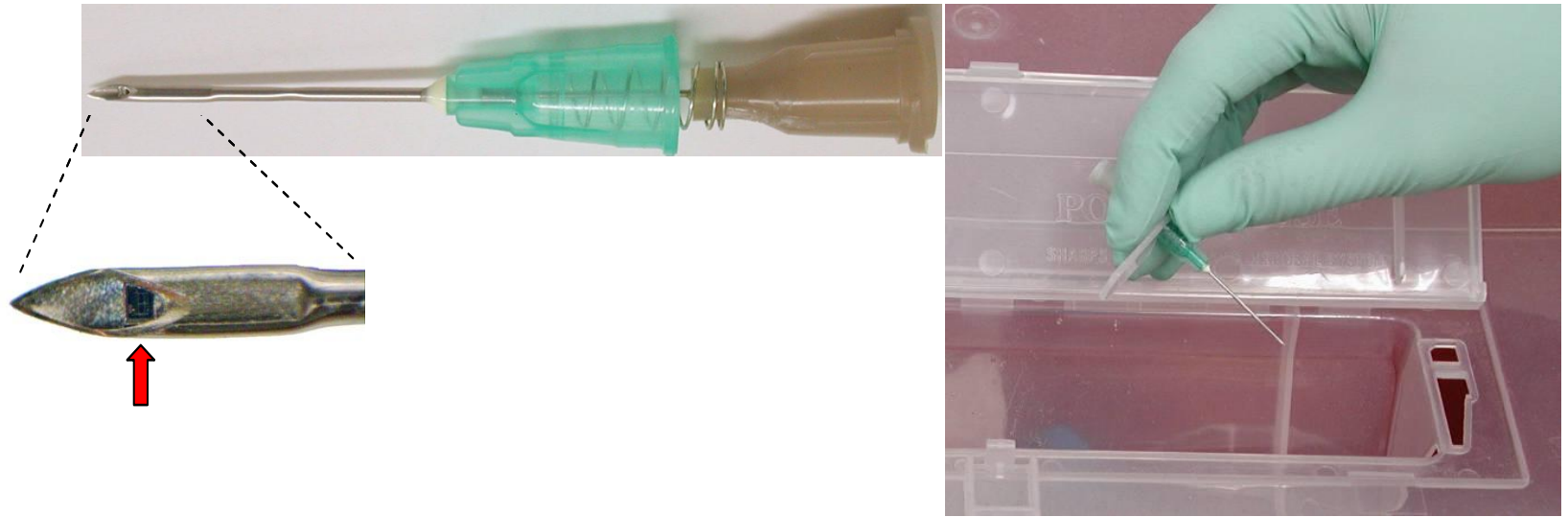


4. Automatically register ID



“Tagged and registered in under one minute”

Injector for p-Chips

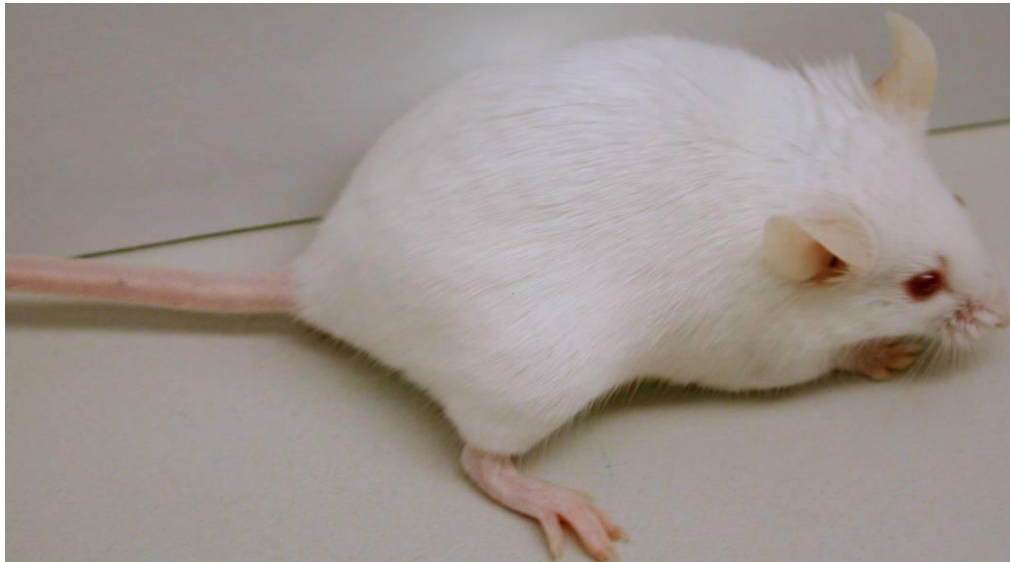


- Modified 21 gauge needle and plunger
- Ready for use: pre-loaded, sterile & disposable
- Chips held in place with a mild, biocompatible adhesive

Mouse Tagging Clip



Mouse Tails Tagged with p-Chips

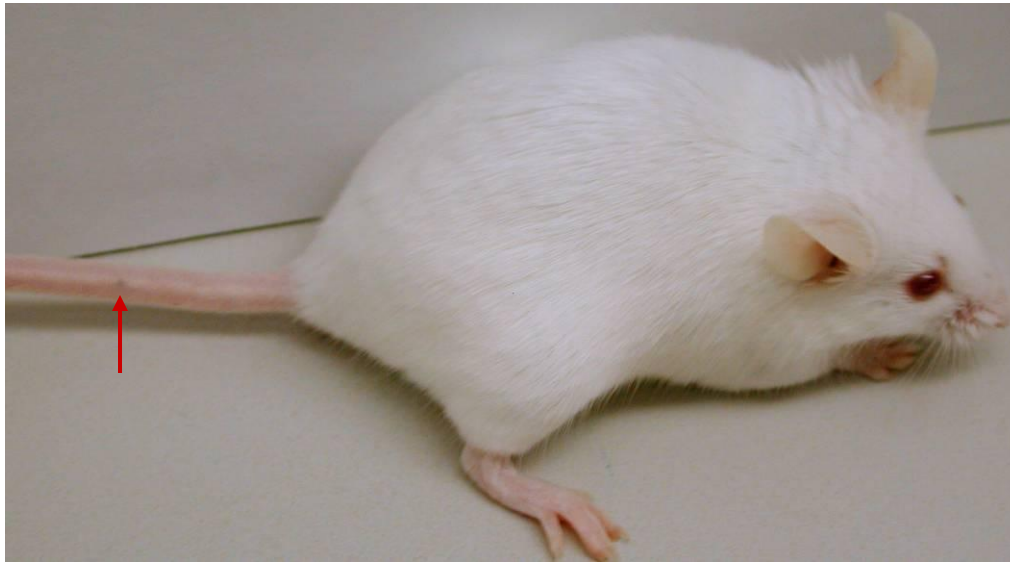


BALB/c



C57BL/6

Mouse Tails Tagged with p-Chips

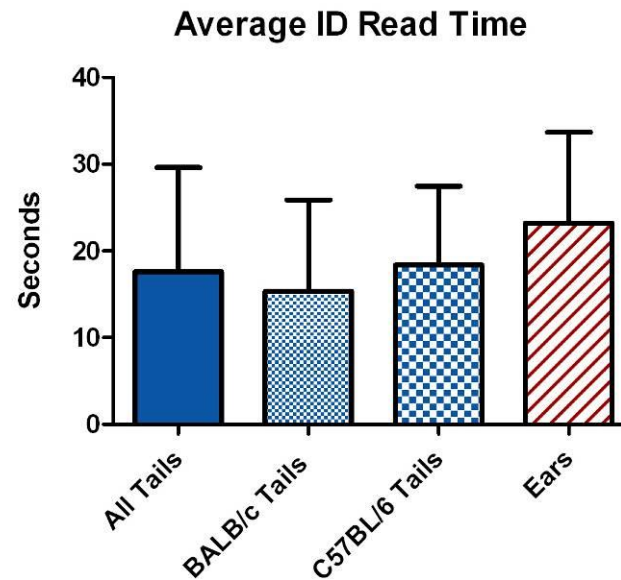
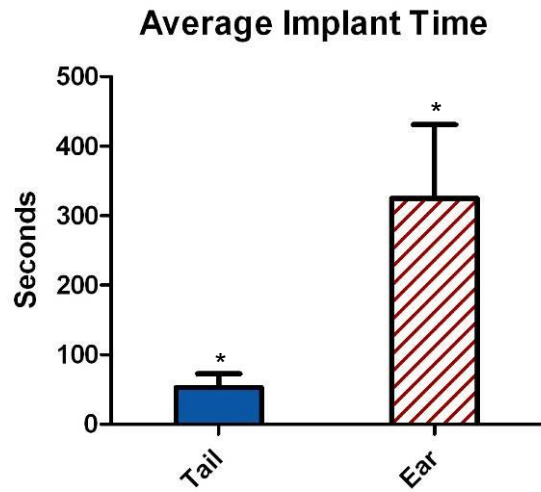


BALB/c



C57BL/6

p-Chip Implantation & Use in Mice

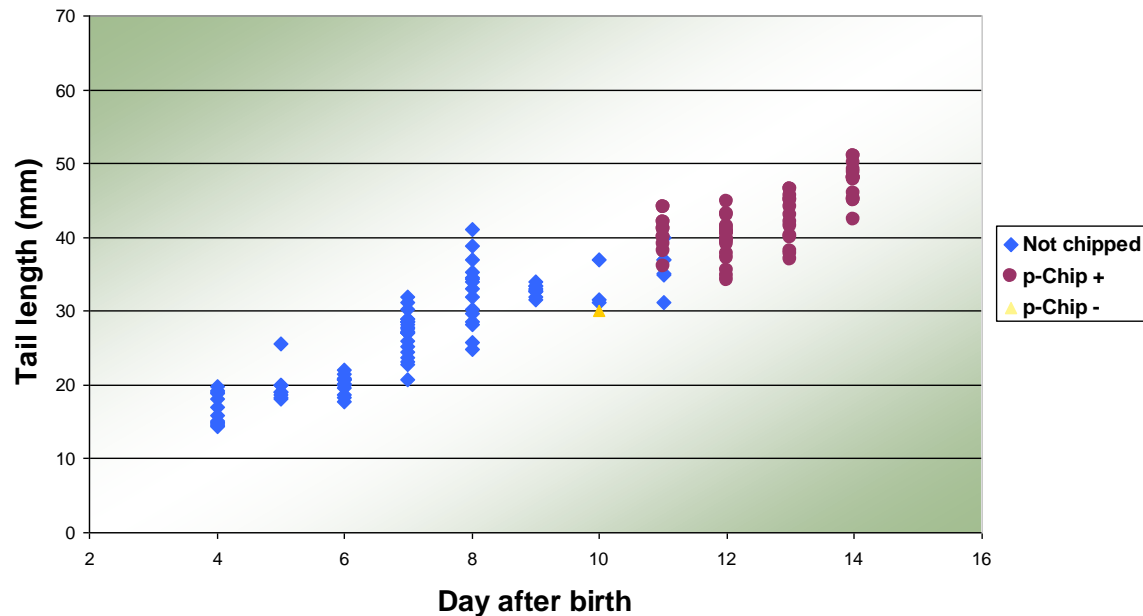


- Less than 1 minute to pick up, restrain and implant a p-Chip per mouse tail

- Less than 30 sec to scruff and read each mouse ID

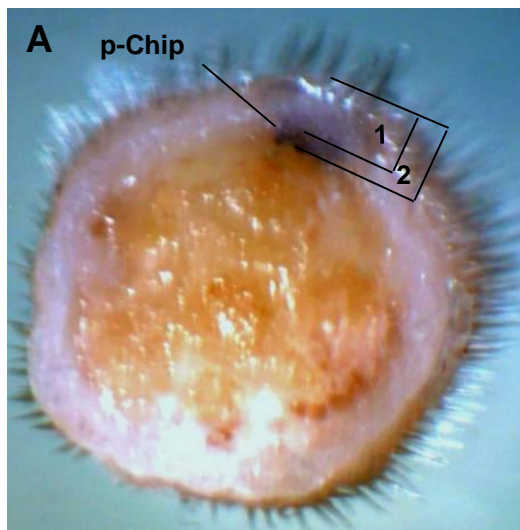
Implantation of p-Chips in Mouse Pups

Chip implantation based on tail length



Mice with tails longer than 40 mm can be tagged with p-Chips

Biocompatibility of p-Chips in Mouse Tails

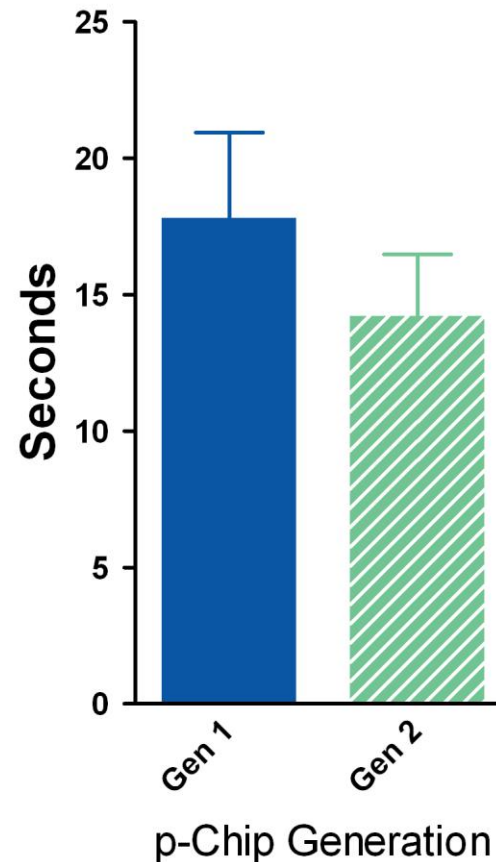


3 months after implant; H&E, x20

Reading Implanted p-Chips in Mice

- Less than 20 seconds to scruff and read ID per mouse with new chips
- 2nd generation p-Chips reduce handling time to read IDs by 20%

ID read time/mouse



ID Reader PC software: keyboard input simulation

Direct entry of ID to current cursor location

The screenshot displays the JCMS software interface. On the left, the 'JCMS Manage Mouse Color' panel includes buttons for 'Add Mouse' (circled in red), 'Add litter', 'Edit Mouse', 'Edit Litter', 'Add Mice at Wean', 'Add Litter w/', 'Bulk Add Mice', and 'Bulk Edit Life Status or Diet'. Below this is the 'JCMS Track Experimental Data' panel with buttons for 'Add Exp Data', 'Add Exp Plan', 'Add Exp Test', 'Edit Exp Data', 'Edit and Manage Exp Plan', 'Edit Exp Test', 'Bulk Add Exp Data', and 'Import Exp Data'. The main window is titled 'Add a new mouse' and contains a form for entering mouse details. The 'Mouse ID' field is set to '1933' (circled in red). Other fields include 'Protocol ID' (10008), 'Litter #', 'Strain' (BALB/cByJ), 'Generation' (F01), 'Date born' (6/3/2011), 'Sex' (F), 'Life status' (A), 'Breeding status' (V), 'Coat' (Albino), 'Diet' (4%), 'Owner' (Maryann), and 'Origin' (JAX). The 'Pen Information' section shows 'Pen # 990', 'Date Established' (6/3/2011), 'Room' (H), and 'Health Level' (2). A 'Mice entered this session' box shows '1452/990'. At the bottom are 'Submit', 'Clear', 'Set Genotype', and 'Set Mouse Use' buttons. On the right, a 'p-Chip Reads' window shows a log of IDReader 4207 connections, with the ID '1933' circled in red. Below it, a 'Settings' window has the 'Input Simulation' tab selected, with the checkbox 'Simulate keyboard entry of ID' checked.

Input into any windows application that accepts keyboard input such as Excel, Access, JCMS* and other database software

Establish Chain-of-Custody with p-Chips



New Mice



ID / Data Registration



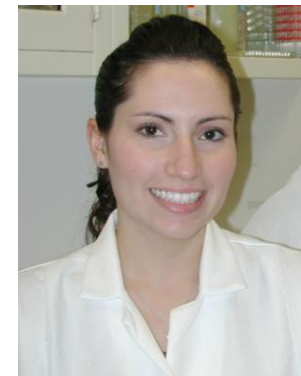
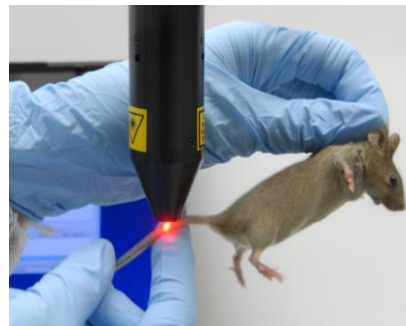
Inventory



Electronic Data
Access



ID Confirmation &
Data Download

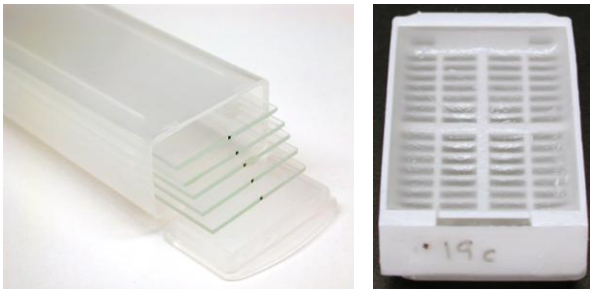


Transfer to
Investigator

Other Applications



**Histopathology samples:
Glass slides & tissue cassettes**

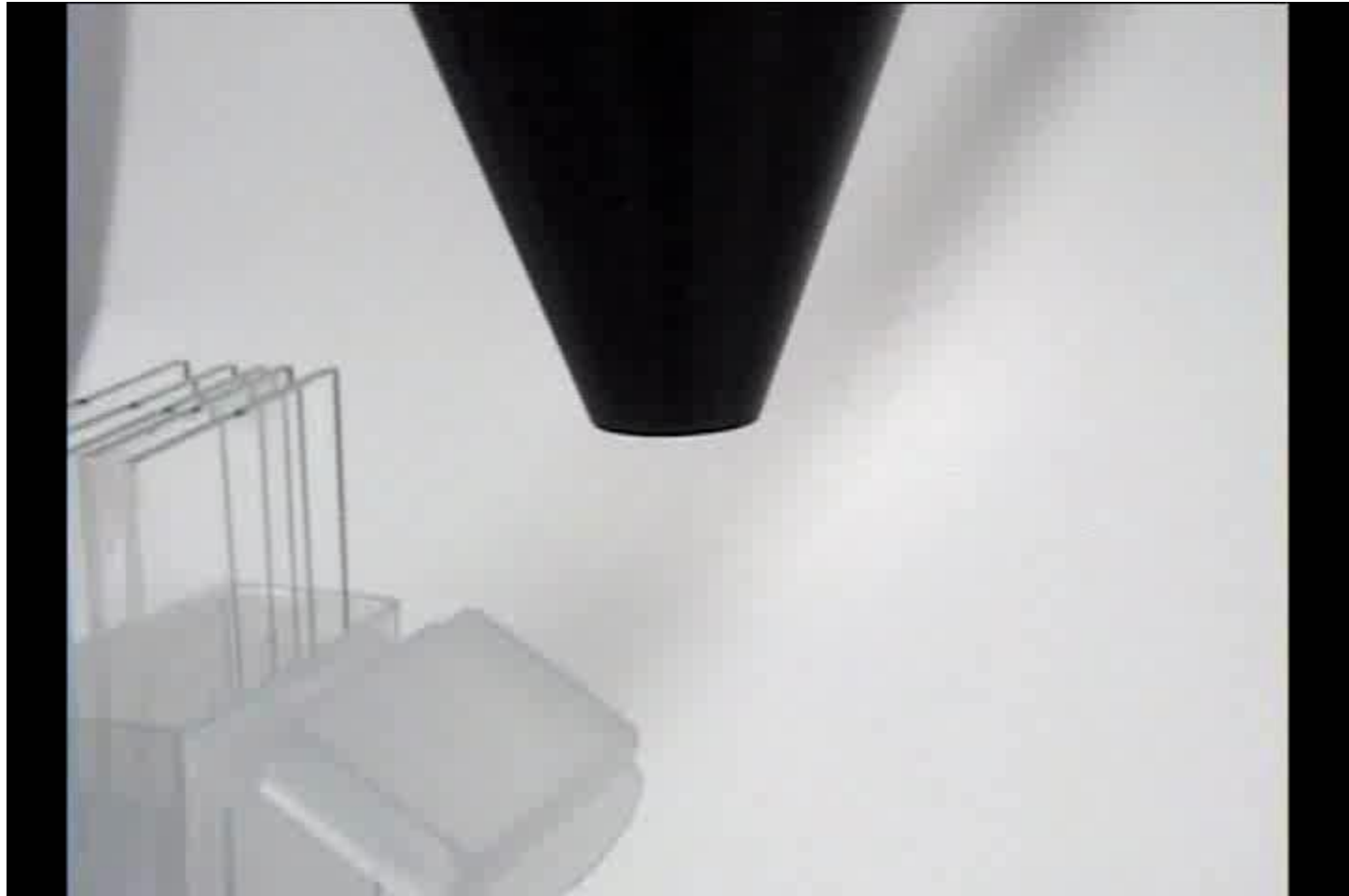


**Biorepository samples:
Cryovials, embryo straws, etc.**

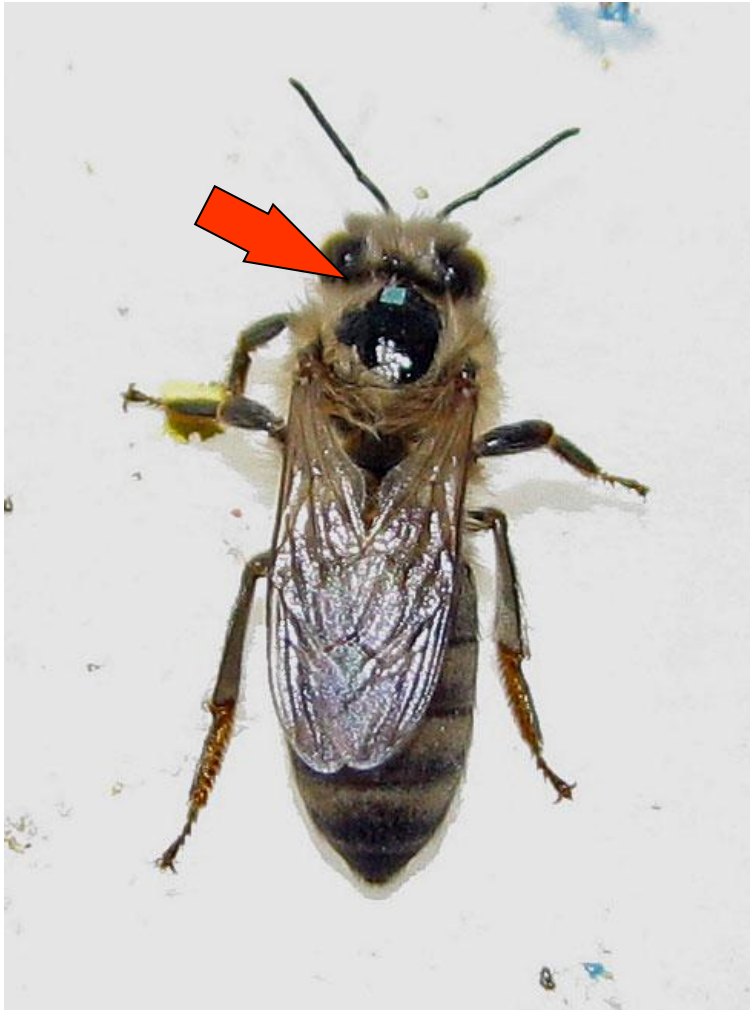
Taxonomy research: Insect pins



Reading Tagging of Microscope Slides



Bees Tagged with p-Chips



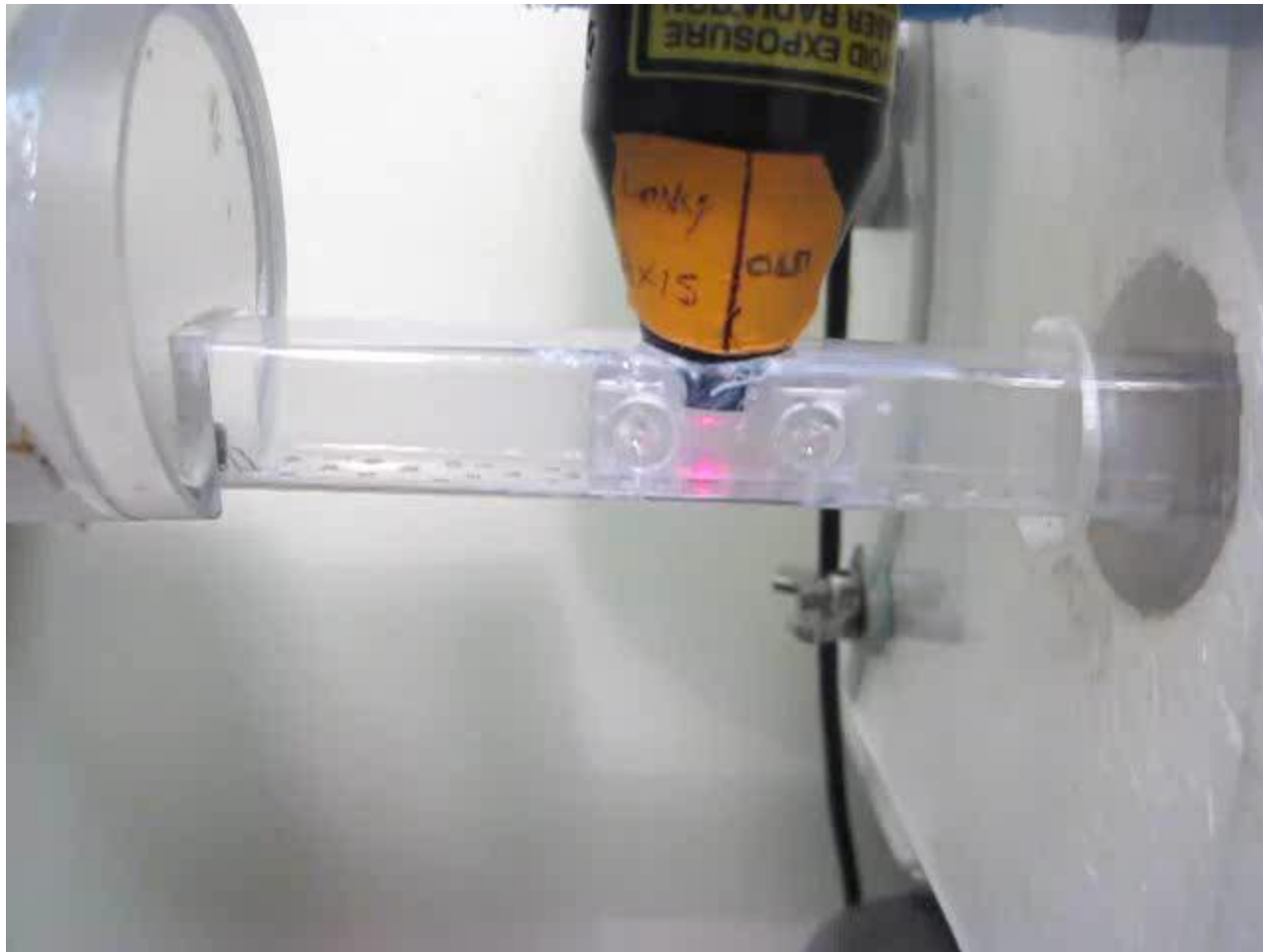
Relevance:

Colony collapse disorder
Insect sociobiology research



Credits: the Robinson Bee Lab at the
University of Illinois in Urbana

Bees Tagged with p-Chips



Thank You

PharmaSeq, Inc.

**11 Deer park Drive, Suite 104
Monmouth Junction, NJ 08852**

Email: info@pharmaseq.com

Tel: 732-355-0100

Website: www.pharmaseq.com

Accessory Items



Clamp stand
to hold wand



Optional
disposable
wand covers



A restrainer with tail access

