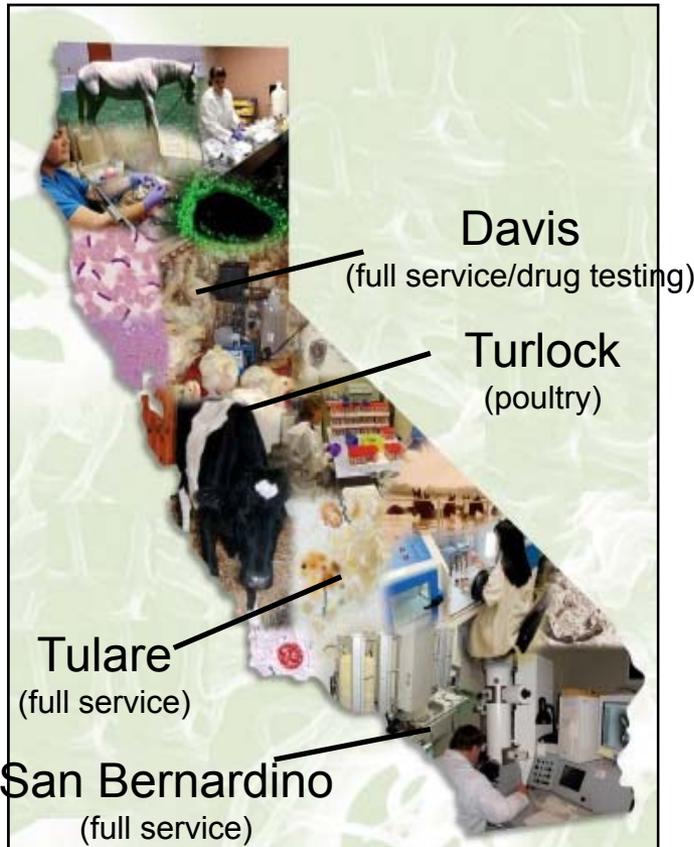


The California Animal Health & Food Safety Laboratory System



Overview for FDA/CVM Vet LRN Program

Dr. Richard Breitmeyer, Director
Dr. Robert Poppenga, Toxicologist



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CAHFS' Mission

Livestock & Poultry Disease Control



Health Management



Food Safety



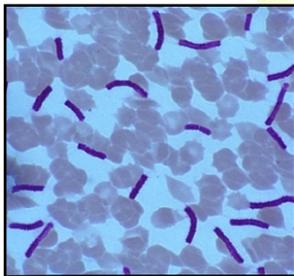
Public Health

■ BYRON
Anthrax Kills
35 Cattle in
Contra Costa

are outbreak of deadly an-
thrax has killed about 35 head of
in the eastern Contra Costa
town of Byron, state
officials said yesterday.

infectious disease, which
at six ranches in Byron ear-
month, was a major health
to both animals and people
vaccines were developed
decades ago.

with experts said veterinari-
d affected ranchers appear
e contained the Byron out-
by quarantining and immu-
the cattle. Dead animals
been buried deep under-
according to state Depart-
Food and Agriculture offi-



New Knowledge



Equine Health



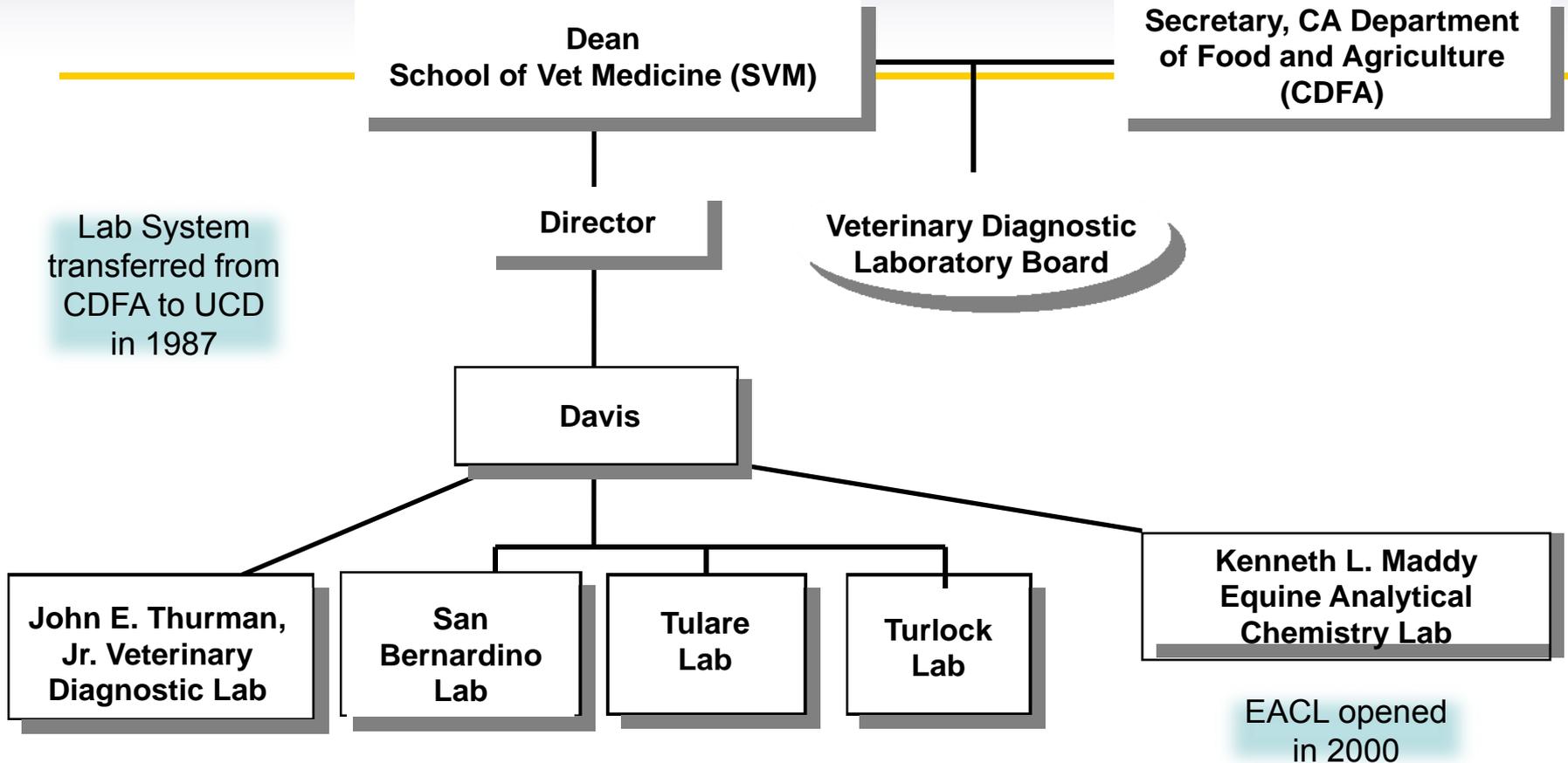
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CAHFS' Organization



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Faculty & Staff



- 24 Faculty FTE



- 107.5 Technical staff FTE



- 7 Information Technology FTE
- 6 Residents
- 27.5 Administration FTE



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CAHFS' Core Services

- Early warning system for foreign and emerging diseases in agriculture – Surveillance & Emergency Response
 - 30,000 accessions & 1.1 million tests performed annually....
 - CDFA contract – subsidized diagnostic testing



Disease surveillance



Exotic Newcastle Disease: 2002-2003



Bovine Tuberculosis: 2003-04 / 2008-09



Melamine contamination: 2007-08



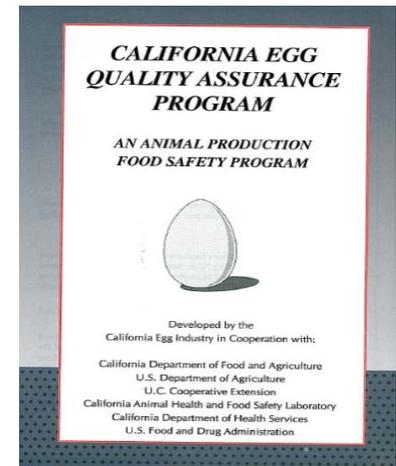
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CAHFS' Core Services

- Support for animal health and food safety regulatory programs



Brucellosis/TB Programs

Endemic Diseases - Trich

Milk and Dairy

S. enteritidis in Eggs



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CAHFS' Core Services

Microbial Food Safety



- Poultry environmental and egg testing
 - *Salmonella enteritidis*
- Milk and dairy products
 - *E. coli* O157/H7
 - *Campylobacter*
 - *Listeria*



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CAHFS' Core Services

- Food and feed safety



Botulism investigation/research
(presence in milk? more sensitive assays?)



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CAHFS' Core Services

- Food and feed safety – Oleander



- Highly toxic – dried/fresh
- ~7 leaves can kill a horse or cow
- ~1 leaf can kill a human



CAHFS' Core Services

- Development and validation of laboratory tests to detect disease, toxic agents and drugs....



Melamine



Poisonous mushrooms



Bluetongue virus
real-time PCR 8



Dantrolene &
Yohimbine



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CAHFS' Core Services

- Diagnostics in species large and small....



California Pepper Tree

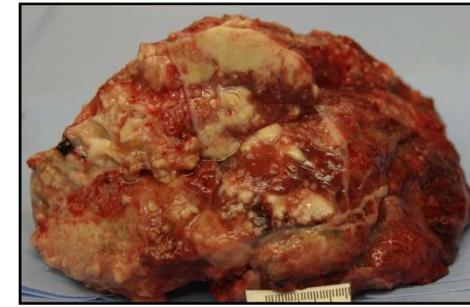
Intoxication from alcohol in berries



Wild Cedar Waxwing



PAW Elephant
Chronic Joint Disease
TB Suspect



Lung abscesses with
human form of TB

“One Health”



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CAHFS' Core Services

- New information, outreach and research
 - Industry stakeholders and veterinarians
 - Describe new or unusual syndromes of disease
 - Teaching – veterinary students, residents, etc.
 - Provide diagnostic material for new research



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CAHFS' National Recognition

Member of 3 National Laboratory Networks



Nationally Accredited/ Fully implemented quality management system



Equine Analytical Chemistry Laboratory

ISO/IEC 17025:2005

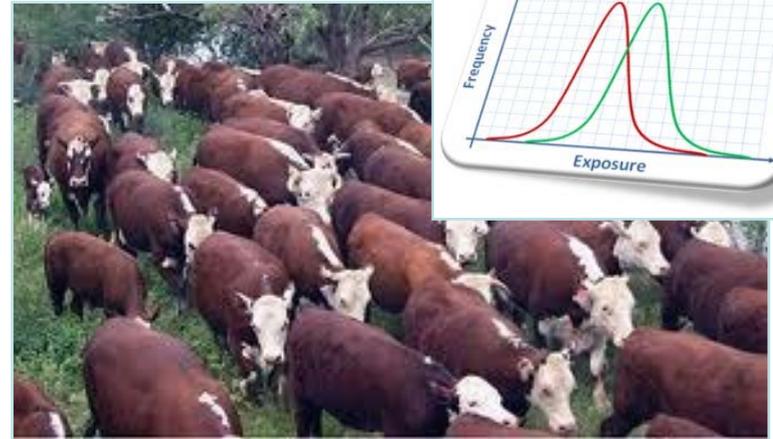
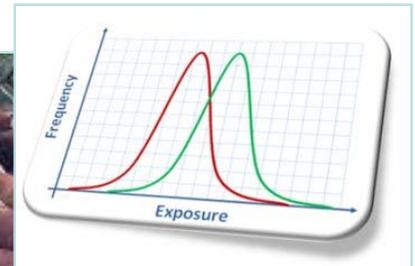
Testing Laboratory - Certificate #2205-01



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New Initiatives

- **FY 2011:**
 - Addition of a faculty Clinical Epidemiologist position



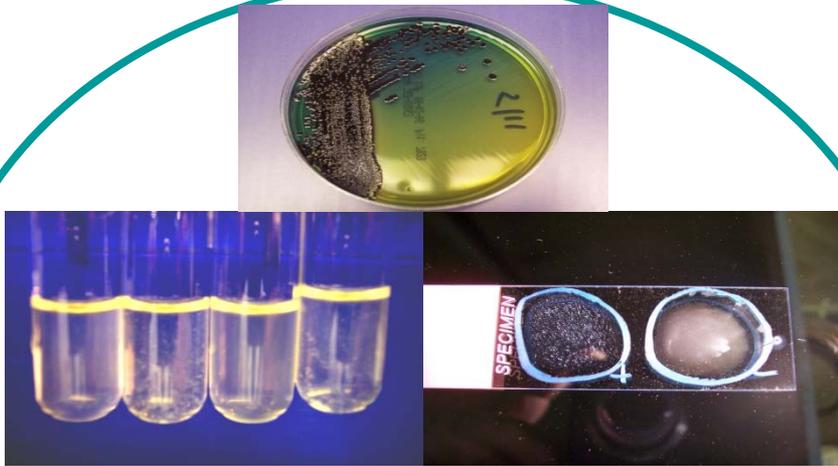
- Addition of a food safety residency program (Dairy emphasis)



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New Initiatives

Partnership with Agilent Technologies



Salmonella identification and serotyping: up to 11 Days

Development of a rapid microbial identification and typing system using a novel tool...

...for *Salmonella* subtypes and other food-borne bacteria

Goal...from days to hours!



Analytical Toxicology Services

- Fully equipped analytical chemistry laboratory



Instrumentation



Personnel



Quality Assurance



Collaboration



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Personnel in CAHFS Toxicology

- Receiving Technician
 - Establishes our Chain-of-Custody
 - Metals Analysis Group
 - Three SRA's with a combined 37 years of metals analysis experience
 - Organic Analysis Group
 - Seven SRA's with a combined 92 years of analytical experience at CAHFS Toxicology
 - Chief Chemist
 - Veterinary Toxicologists (too many combined years of experience)
 - Resident
-



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Instrumentation in CAHFS Toxicology - Organics

- GC/MS systems:
 - 3 Agilent 5970, one with automated headspace/SPME capabilities
 - 1 Waters Quattro Micro GC/MS/MS with EI/CI sources
- LC/MS:
 - 2 ABI/Sciex 4000 Qtrap systems, one with Michrom HPLC and “CaptiveSpray” ion source
 - 2 Thermo Linear Ion Trap systems (LTQ and LXQ)
 - 2 Thermo Exactive high resolution accurate mass spectrometers; LC and DART interfaces.



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More Instrumentation:

- Inorganics:
 - 1 AA system, 2 ICP-AES, 1 ICP-MS (with HPLC for speciation work)
 - Organics
 - 2 GC's equipped with ECD and FPD
 - 1 Dionex Ion Chromatograph
 - 2 HPLC systems with fluorescence and diode array detectors
 - 2 HPLC systems with post-column derivatization units
 - 2 Plate readers for ELISA and enzyme kinetics assays
 - 1 Microscope with integrated FTIR system
-



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Highest Volume Tests

- Heavy Metals Screen (Pb, Mn, Fe, Hg, As, Mo, Zn, Cu, Cd)
- Selenium (by hydride generation)
- Trace Element Screen (Fe, Mg, Zn, Cu, Ca, P, Na, K)
- Vitamin E
- Anticoagulant Screen
- Oleander Glycosides
- Salt Screen (P, S, Mg, Ca, Na, K)
- Ionophore Screen
- Vitamin A
- GC-MS Screen



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Surge Capacity

- Inorganics lab + organics lab + redundancy = surge capacity



ICP; AA; ICP-MS



GC-MS; LC-MS/MS; Specific Detectors



Redundancy and Variety of Instrumentation



Surge Capacity



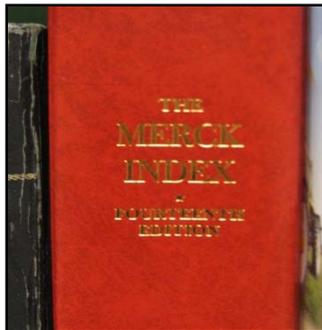
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Rapid Response

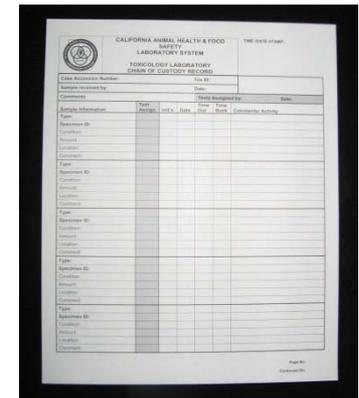
- Determine the toxin: GC-MS and LC-MS poison screens
- Exactive: High resolution accurate mass spectrometer
- Develop a specific method: extraction/analysis
- Lab Management: emergency samples vs. routine samples



Poison
Identification:
Poison Screens



Develop the Specific Method:
Extraction & Analytical



Receive, Analyze and
Retain Samples



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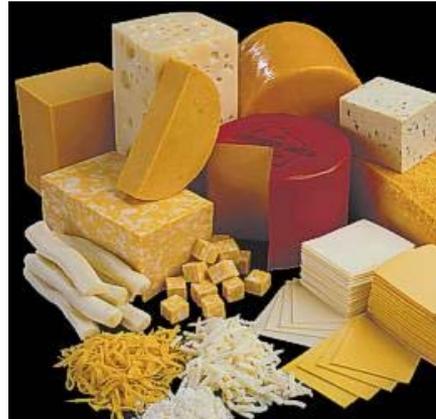
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Emergency Response

- Capacity to quickly respond to food and animal health emergencies:



Melamine in
Meat



Beta-Lactam
Antibiotics in
Dairy Products



Chloramphenicol
in Milk



Phorate in
Animal Feed



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