

**Prevention and Control of Avian Influenza In the US
First Annual Meeting
USDA-CSREES, NRI, CAP (Cooperative Ag Project)
IPE Atlanta, GA, Jan 27, 2005**

Minutes

Agenda:

Dr. Richard Slemons

Welcome, Opening remarks.

Dr. Slemons presented the project to the Scientific Advisory Board and the Stake Holders to explain its importance and how they fit in the project. Dr. Slemons explained how many institutions and states are participating in the project and made a PowerPoint presentation highlighting the major objectives of the AI CAP grant (please refer to the attached pdf file containing the presentations from each speaker at the meeting).

What does the USDA want?

Safeguard products and professionals from animal disease and associated losses
Establish investigator collaboration

Goals at IPE meeting Jan 2004

Be realistic

Pass as much funding as possible w/ overhead costs to subcontracts

Allow for smaller grants where researchers would be recognize as PIs

- How plan came to be, funding and direction

CA meeting 2004

Administration plan worked out

Project Philosophy

Financial Plan

3 Aims, 8 Objectives

AIM 1: to determine the basis of adaptation of AI from wild to land-based birds,
molecular basis

Obj 1 a) define role of intermediate host in chickens/turkeys

b) molecular basis of transmission using reverse genetics

Obj 2 molecular basis viral infections in chickens/turkeys

AIM 2: Determine dynamics and evolution of AI in the LBM (live birds market) system,
wild birds, etc. To characterize risk factors contributing to the perpetuation of viruses.

Bring forth educational/outreach programs

Obj 3: characterize risk factors in LBM

Obj 4: establish and maintain coordinated network of wild bird population surveillance in US

Obj 5: build effective educational programs, outreach and extension

Obj 6: identify/understand poultry pathogen inactivation and create network of local expertise

AIM3: Critical diagnostic test and vaccine development

Obj 7: diagnosis of AI

Obj 8: vaccines

II) Dr. Peter Johnson (USDA)

Dr. Johnson made reference to the importance of the first year of the project. He mentioned that the first year is essential to establish the network, communication within the group and stakeholders. Dr. Johnson also mentioned the importance of showing a cohesive unit to attract potential funding from other sources, including the poultry industry. (no ppt)

III) Dr. David Swayne (South East Poultry Research Labs, ARS, USDA)

Dr. Swayne noted the importance that this project has for the poultry industry in the U.S. Dr. Swayne also reminded everyone the SEPRL are available to anyone wanting to establish collaborative projects and the ARS, USDA is committed to the success of the AI CAP project. (no ppt)

IV) Dr. Perez

Overview of Scientific and Administrative Structure

Dr. Perez presented an overview of the Scientific structure of the project. He also explained how different projects were selected for funding. He introduced the members of the SAB and stakeholder panel. He also mentioned of the importance of incorporating additional institutions and/or states into the project in the future USDA CSREESN 2005-35605-15388

Aimed at prevention/control AI within US

Developed knowledge based programs to prevent emergence AI

17 participating states: not covering everyone in US with poultry industries, goal is to be able to incorporate more states and poultry industries in future

Network

National Stake Holders / Regional Coordinators + Scientific Advisory Board

+

Institutions / Investigators

Executive Committee- Job is to ensure what is being proposed gets done. Maintain communication and transaction records. Reach consensus to go forward.

Scientific Advisory Board – Review proposals also use Ad-Hoc reviewers when necessary

Major Focus on

- Monitoring scientific quality of projects
- Identifying scientific merit of research proposals
- Recommending proposals for funding
- Recommending changes in budgets for different proposals

See funding as platform, starting point to look for funding elsewhere

Stake Holder Panel & Regional Coordinators

What we request from you:

- Provide input
- Present at meetings whenever possible
- Prepare recommendation to USDA annually
- Liaison for group

What we give?

- Annual report of what did (stake holders and exec committee)
 - o Annual meeting at IPE (January), semi-annual meetings at AAAP/AVMA (July) & review groups (PIs, Exec committee)
- Useful resource
- Educational programs

Review Groups

1) Molecular markers of adaptation Immunosuppression

Gelb, Selmons, Perez, Olsen, Saif

Quarterly meetings

2) Risk factors in LBM, supply flocks, AI surveillance

Tablante, Cardona, Slemons, Pendleton

3) Education & Outreach

Tablante (same as above)

4) Diagnostics

Suarez, Lupiani, Garcia, Vakharia

5) Vaccine

Lupiani, Toro, van Santen, Suarez, Elankumaran

Review groups not fixed. Anyone interested can participate in any of them.

Where is \$ going?

1) Executive committee reviews and approves

2) PI and co-PI report detailed breakdown of all project administration costs on annual basis

3) Project renewed through renewable subcontracts, semi-annual basis

4) Project can be terminated if

- a) Goals are not met
- b) Goals are met but goals are insufficient
- c) Meet goals but priority changes

--> 1.7 million funding for year one

MD charging 25%, subcontractors charge 25% on 90% of budget, 22.5%

\$100,000 uncommitted funds, not touched for 1st year, emergency fund

Website up 2/28/05

To include

- Public and secure domains
- Current research projects
- Description of projects
- Current funding projects
- Links to AI websites and info
- Education & Outreach resource page targeted to different levels of education 4th grade and up
- Call for proposals/renewal of projects
- Newsroom for media
- Meeting highlights/upcoming meeting

Mission Accomplished?

- First time
- Network of researchers and institutions
- Platform for new PIs with good ideas but no experience
- Close gap for new technology and AI research
- Close gap between research and public
- Make major contributions to prevention of AI

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1) Q: Where website being hosted?

A: UMD server, look into options for host server

2) Q: Projects in process...when will awards be made? When can draw funds?

A: 2/1 form due. Semi-annual report 6/15/05 and annual due 11/05. Request for renewal or new proposals so that awards given in Feb, no break in funding

V) Dr. Yehia Saif

Objective 1: Molecular basis of interspecies transmission

4 Labs/Groups Involved

- 1) Olsen
- 2) Saif/Slemons
- 3) Gelb
- 4) Perez

Important to consider:

Pathogen, host, environment

Why transmission made possible? Amino acid composition, host proteases, etc. what is particular for virus/host

Co-infection w/ another virus (work done by Dr. Gelb) leading to factors of transmission and adaptation to other hosts (no ppt)

VI) Dr. Pendleton / Dr. Tablante

Education Component

Objectives 5 & 6

Prevention & Training for Game Bird Producers

- \$1-3 billion industry
- Surveillance is minimal, few educational efforts despite close proximity between game birds and commercial poultry **** important to maintain surveillance
- LBM supplied with game birds: quail, chukka, guinea fowl, pheasants
- 8-10 workshops for key producers in 2 year period across country
 - o Local veterinarians, poultry scientists & veterinarian to host regional workshops
 - o Workbook/handbook to hosting states
 - o Goal: biosecurity education and training of AI, 50% participation

Objectives

- 1) Produce manual with CD & website
- 2) Promote NPIP participation
- 3) Conduct surveys from workshops what was implemented
- 4) Questionnaire

9 institutions involved, hosting workshops

Aim 2: determine dynamics and evolution of AI in LBM & game birds, risk factors, educational programs

Objective 3: characteristics of risk factors of LBM in CA, NY, MN

Objective 5: build effective education and biosecurity programs

Objective 6: develop pathogen inactivation procedures & network of local expertise

Objective 3:

- 1) Administer questionnaires to biosecurity and management practices in LBM
- 2) Collect GIS data and develop database for bird movement and outbreak monitoring
- 3) Collect swabs randomly from LBM
- 4) Mapping (follow wild bird isolations to LBM and commercial/domestic poultry)
- 5) Model building

Objective 5:

- 1) Education tools
- 2) Workshops

Objective 6:

- 1) Isolate and test AI and NDV
- 2) Decontamination agents, euthanasia methods, testing etc over 2 years
- 3) Training program: 22 half-day sessions, 12 states

VII) Dr. Richard Slemons

AIM 2: risk factors associated with LBM in CA, NY, MN

- Need to see year to year variation: four flyways – two sites/flyway
- Need sequential data to draw conclusion
- Pathogenicity and tropism studies
- Migratory & non-migratory birds → AI in areas where migration does not take place but around in water from non-migratory birds
- GIS database
- Virus subtyping & sequencing → database for wild bird viruses

Prevention is ultimate goal

Establish phylogenic relationship

Monitor movement of genes across species barrier

Optimal gene constellation or persistence of genes over time

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- 1) Q: Focus on species for wild birds.
A: Water fowl, focus on what other species involved. Waterfowl easiest to capture to test.
- 2) Note Importance of shorebirds role, especially in DelMarVa Bay. Migratory time important but other times equally important to survey. Compare droppings, water and swab samples to see if sampling can reflect what is in the birds, how long do viruses persist in environment.

VIII) Dr. David Suarez

Objective 7: Diagnostic

Goals

- Improve penside diagnostics
- RT PCR
- DIVA strategy

DIVA

- ELISA to implement DIVA strategy using antibodies to NA protein
- Concentrate N2, but also 1,3,7 and then all subtypes
- Baculovirus expressing N2 protein
- Test sensitivity from experimentally and environmentally infected birds

Rapid Diagnostics

- Interferometric wavelength
- Antibody to AI, allow to bind antigen if present → light source through and above sample, form wave pattern. See particular pattern if binding occurs.
- Works with food safety
- Cost efficient for field use

Goal

Rapid, label-less detection

Regenerate surface, rerun samples with same chip

Use H7 as test

DNA Microarrays

M gene hybridization as a pan influenza marker (internal control)

Way to type isolates faster

Initial objective to differentiate H5,7,9 and N2,1,3

Possible geographic location and internal proteins for origin

Monoclonals to NP and M gene

Made but not easily available

Production of diagnostic reagents

Antibody capture system for whole or viral proteins in syringe format

Concentrated virus then detected by other tests

Improved sensitivity

Real Time RT-PCR

Optimization of procedure for AIV

IX) Dr. Haroldo Toro

Vaccines

1) Antigenic drift in Mexican AIV strains using DNA vaccines

- Use site-directed mutagenesis to map antigenic sites from HA Mexican line

2) LPAI H5 and H7 suitable for vaccine seed strains for emergency vaccine stockpiles

3) Novel vector vaccines: recombinant and reverse genetics using SFV, MDV, IBV to express HA gene, start with H5. Test in IBV vaccinated birds instead of SPF

4) Control AI in flocks with vaccines generated by reverse genetics. Express H5, H6, H7 by NDV vectors & produce inactivated vaccines where cleavage site for H5 replaces by H6 low path

5) Replication-defective adenovirus recombinant vaccine

X) Dr. Blanca Lupiani

National Center for Foreign An & Zoonotic Disease Defense

Designed to have the capacity and flexibility to handle the range of effects of zoonotic diseases

Representative diseases (in order of importance)

- Foot and mouth
- Rift valley
- AI
- Brucellosis

Prevention, detection, response, recovery, education/risk communication

Concern: Gap where avian interacts with human influenza & public health → where research is going to focus i.e.) LBM and public interaction

Website where objectives and goals of both grants are presented to ensure no overlapping
<http://fazd.tamu.edu/>

XI) Dr. Andrea Miles (APHIS)

Possible overlaps in programs

- 1) Uniform standards for LPAI in LBM systems, on website
- 2) NY state LBM, especially in NYC working to reduce AI
- 3) NJ and PA LBM monitoring in place and developing
- 4) Continuing educational programs, every 3 months have a 3-day program for anyone entering the LBM system. Update current members one day, other 2 for new members.
- 5) LBM system, need to go through the states before getting involved
- 6) National Surveillance Program
- 7) Developing database from LBM and NPIP coordinate efforts and access

Open Forum

1) Dr. Mark Jackwood (UGA)

Dr. Jackwood proposed to have the AI CAP annual meeting coinciding with the International Scientific Poultry Forum (Mon and Tues before IPE). Participants in the AI CAP project would have an opportunity to present their data at the meeting where a large number of stakeholders would have a chance to see what is going on. Abstracts are submitted and published in hardcopy and CD as well as in Poultry Science Journal.

2) Jim Sumner (USPE&E)

Mr. Sumner referred to the huge financial losses when outbreaks occur, cost effective to help surveillance to prevent, isolate outbreaks versus cleaning up after one. He emphasize the importance that our project for the poultry industry and thank the project participants for the endeavor.