

# CURRICULUM VITAE

University of Idaho

**NAME:** Alexander V. Karasev

**DATE:** December 1, 2012

**RANK OR TITLE:** Associate Professor

**DEPARTMENT:** Plant, Soil, & Entomological Sciences

**OFFICE LOCATION AND CAMPUS ZIP:** AGRICULTURAL BIOTECHNOLOGY BUILDING 422, room 105, P.O. Box 442339

**OFFICE PHONE:** (208) 885-2350

**FAX:** (208) 885-7760

**EMAIL:** akarasev@uidaho.edu

**DATE OF FIRST EMPLOYMENT AT UI:** February 21, 2006

**DATE OF PRESENT RANK OR TITLE:** July 1, 2011

**DATE OF TENURE:** July 1, 2011

## EDUCATION BEYOND HIGH SCHOOL:

### Degrees:

Post-Doctoral Training, Department of Plant Pathology, University of California, Riverside, 1993.

Ph D, Moscow State University (Russia), 1985.

BS, Moscow Academy of Veterinary Medicine (Russia), 1979.

## EXPERIENCE:

### Academic:

Associate Professor, University of Idaho. (July 1, 2011 - Present): Research on plant virus diseases in crops important in Idaho, e.g. potato, legumes, small grains, sugar beet, and grapevines, with the overall goal to control and manage plant viruses in the state of Idaho. Basic research program on virus-host interactions and genetic factors involved in plant virus insect transmission. Applied program on virus epidemiology, detection, and strain differentiation. Teaching a graduate plant virology course (PISc 511) in a cross-listed program with the Washington State University, and plant science graduate seminar (PISc 501).

Assistant Professor, University of Idaho. (February 21, 2006 – June 2011): Research on plant virus diseases in crops important in Idaho. Teaching a graduate plant virology course (PISc 511) and plant science graduate seminar (PISc 501).

Assistant Professor, Thomas Jefferson University. Philadelphia (September 8, 1998 - February 17, 2006): Research on utilizing plant viruses as vectors for production of biomedical and other value-added products in plants. Expression of functionally active vaccine components and therapeutic antibodies in tobacco and spinach.

Assistant in Plant Virology, University of Florida, Lake Alfred (September 1994 – September 1998): Research on molecular biology of *Citrus tristeza virus* and other closteroviruses affecting tropical fruits and vegetables – virus-host interactions and insect vector transmission.

Postdoctoral Research Associate, University of Florida, Lake Alfred (January 1994 – September 1994): Research on molecular biology of *Citrus tristeza virus* and other closteroviruses affecting tropical fruits and vegetables – virus-host interactions and insect vector transmission.

Postdoctoral Research Associate, University of California, Riverside (January 1992 – December 1993): Research on molecular biology of *Citrus tristeza virus* and other closteroviruses affecting tropical fruits and vegetables – virus-host interactions and insect vector transmission.

Senior Researcher, Institute of Microbiology, Moscow, Russia (1991-1997): Research on molecular biology of *Beet yellows virus* and other plant viruses affecting vegetables.  
 Researcher, Institute of Microbiology, Moscow, Russia (1988-1991): Research on molecular biology of *Beet yellows virus* and other plant viruses affecting vegetables.  
 Junior Researcher, Institute of Microbiology, Moscow, Russia (1984-1988): Research on molecular biology of *Beet yellows virus*.

**Governmental:**

Visiting Scientist, USDA-ARS Pacific West Station, Salinas, CA (October 1997 – November 1997):  
 Research on whitefly-transmitted closteroviruses affecting vegetables in California.

**TEACHING ACCOMPLISHMENTS:**

**Areas of Specialization:**

Plant viruses, virus diseases of plants, virus-host interactions. Broad area of interests includes molecular genetic factors of plant viruses responsible for symptom induction, vector transmission, and evolution of viruses. Methods to detect and differentiate plant viruses and virus strains.

**Courses Taught:**

- PISc 511 course is taught jointly with H. Pappu (50%) as cross-listed with WSU PIP511;
- PISc 501 course was co-taught (50%) with R. Tripepi (Fall 2007/Spring 2008), and with J. Chen (Fall 2008/Spring 2009 and Fall 2009/Spring 2010); in Fall 2010/Spring 2011, Fall 2011/Spring 2012, and Fall 2012/Spring 2013 it was taught 100% by me

<u>Number</u>	<u>Title</u>	<u>Enrollment</u>	<u>Credit Hours</u>
<b>Spring 2007</b>			
43367 PISc511-01	Viruses and Virus Diseases of Plants	10	4.0
<b>Fall 2007</b>			
13444 PISc 501-01	Plant Science Seminar	9	1.0
<b>Spring 2008</b>			
43360 PISc 501-01	Plant Science Seminar	6	1.0
<b>Fall 2008</b>			
13444 PISc 501-01	Plant Science Seminar	11	1.0
<b>Spring 2009</b>			
13444 PISc 501-01	Plant Science Seminar	2	1.0
43367 PISc511-01	Viruses and Virus Diseases of Plants	14	4.0
63869 PISc 398-05	INTERN: Molecular Plant Pathology	1	3.0
<b>Summer 2009</b>			
80978 PISc 398-05	INTERN: Molecular Plant Pathology	2	3.0
<b>Fall 2009</b>			
13444 PISc 501-01	Plant Science Seminar	7	1.0
34028 PISc 398-15	INTERN: Molecular Plant Pathology	3	3.0
<b>Spring 2010</b>			
13444 PISc 501-01	Plant Science Seminar	5	1.0

61802 ENVS 499-40	DS: Molecular Plant Pathology	1	3.0
<b>Fall 2010</b>			
13444 PISc 501-01	Plant Science Seminar	4	1.0
<b>Spring 2011</b>			
13444 PISc 501-01	Plant Science Seminar	5	1.0
43367 PISc511-01	Viruses and Virus Diseases of Plants	27	4.0
<b>Fall 2011</b>			
13444 PISc 501-01	Plant Science Seminar	11	1.0
<b>Spring 2012</b>			
13444 PISc 501-01	Plant Science Seminar	6	1.0
PISc 590-01	Potato Production	12	3.0
PIP 535/CS 512 (WSU)	Molecular Genetics of Plant-Pathogen Interactions	30	3.0
<b>Fall 2012</b>			
13444 PISc 501-01	Plant Science Seminar	11	1.0
36004 PISc 502-01	DS: Molecular Plant Pathology	4	3.0

#### **Students Advised:**

##### **Undergraduates:**

Student Mentoring (2007-2012)

Students Engaged in Your On-Going Research Activities:

Jenny Rowley-Durrin (Biology), 2007-2010, graduated with B.S. in 2010  
 Zachary Sielaff (Agric. Eng.), 2008–2010, graduated with B.S. in 2010  
 Anita Shrestha (Env. Sci.), 2008-2009, graduated with B.S. in 2009  
 Briana Fannesbeck (Education), 2008-2010, graduated with B.S. in 2010  
 Eunice Kanuya (Env. Sci.), 2009-2010, graduated with B.S. in 2010  
 Heidi Fingerson (Animal Sci.), 2009-2010, graduated with B.S. in 2010  
 Arturo Quintero Ferres (Plant Mol. Biol., exchange student - Mexico), 2008-2010,  
 graduated from University of Guadalajara in 2010 with a B.S. equivalent  
 Cassandra Sago (Animal Sci.), 2010-2012, graduated with B.S. in 2012  
 Daniel Roop (Agric. Eng.), 2010-2011, graduated with B.S. in 2011  
 Archana Shrestha (Eng.), 2011-present  
 Brandon Thompson (Biology), 2012-present  
 Jeffrey Chojnacky (Env. Sci.), 2012-present

##### **Graduates:**

Student Advising (2006-2012)

Doctoral Degree Committees:

Jeffrey Lacey [Plant Science (PISc); Ph.D. in 2009],  
 Junli Zhang (PISc),  
 Laura Ingwell (Entomology),  
 Damon Huseby (Entomology),  
 Sunil Paudel (Entomology)  
 Diego Viteri (PISc)  
 Sahar Eid [Plant Pathology (PIP) – Washington State University (WSU); Ph.D. in 2010],

Dan Villamor [Plant Pathology (PIP) – Washington State University (WSU); Ph.D. in 2012],  
Christie Almeida [Plant Pathology (PIP) – Washington State University (WSU); Ph.D. in 2012],  
Yu-Hsuan Lin [Plant Pathology (PIP) – Washington State University (WSU); Ph.D. in 2012],  
Khalid Naveed (PIP – WSU),  
Sanchita Haldar (PIP - WSU),  
Esther Ngumbi (Entomology).

Doctoral Students as Major Professor:

Xiaojun Hu [Bioinformatics and Computational Biology (BCB)], Ph.D. in 2009  
Suellen Galvino-Costa (Plant Pathology), Ph.D. in 2011  
Xue Feng (PISc)  
Hui Hou (PISc),  
Heyan Huang (PISc),  
Muhammad Uzman (PISc),

Master's Degree Committees - Thesis:

Mackenzie Ellison (PISc), MS in 2010  
Brad Stokes (PISc)

Lianzhou Cui [Microbiology, Molecular Biology and Biochemistry (MMBB)].

Master's Students as Major Professor:

B. Scott Blades (PISc), M.S. in 2011  
Eunice Kanuya (PISc), M.S. in 2012  
Arturo Quintero (PISc), M.S. in 2012  
Jenny Rowley (Durrin) (PISc)  
Kelsie Evans (BCB)  
Cassandra Sago (PISc)

Student Mentoring

Students Engaged in Your On-Going Research Activities:

Xue Feng (Ph.D. - PISc),  
Jenny Rowley (Durrin) (MS - PISc)  
Arturo Quintero (MS - PISc)  
Kelsie Evans (MS - BCB)  
Cassandra Sago (MS – PISc)  
Brandon Thompson (Undergrad – MMBB)

**Courses Developed:**

13444 PISc 501-01, Plant Science Seminar. (Fall 2007).  
43367 PISc 511-01, Viruses and Virus Diseases of Plants. (Spring 2007).  
63869 PISc 398-05, Internship – Molecular Plant Pathology. (Spring 2009).  
61802 ENVS 499-40, Directed Study – Molecular Plant Pathology. (Spring 2010).  
82188 PISc 502-01, Directed Study – Molecular Plant Pathology. (Summer 2012).

**Non-Credit Classes, Presentations, Workshops, Seminars, Invited Lectures, etc.:**

Invited seminar: Interplay between long-distance transport and vector transmission in phloem-limited plant viruses. Department of Plant Pathology, University of Arkansas, Fayetteville, AR (April 3, 2012)

Invited seminar: Genetic diversity of *Potato virus Y*: a new challenge for plant quarantine services. Citrus Research Board workshop “New Technologies”, February 23-25, 2011, Berkeley, CA

Invited seminar: Genetic diversity of *Potato virus Y*, Department of Phytopathology, University of Lavras, Lavras, Minas Gerais, Brazil (August 20, 2010).

Invited plenary lecture: Genetic diversity of *Potato virus Y*: a new challenge for plant quarantine services, 43<sup>rd</sup> Brazilian Congress of Phytopathology, Cuiabá –MT, Brazil. (August 16, 2010).

Invited seminar: Biotechnology and Genetic Engineering in Plants, Department of PSES, University of Idaho, Moscow, ID, US. (February 18, 2010)

Invited seminar: *Potato virus Y*: an old virus and a new problem, Department of Plant Pathology, University of California, Davis, CA, US. (January 25, 2010)

Invited seminar: Sequencing the North American collection of *Potato virus Y* isolates, Department of Agricultural Microbiology, Universidad Autonoma de Chihuahua, Chihuahua, Mexico. (August 17, 2009).

Invited seminar: *Potato virus Y*: Diversity and New Necrotic Strains, Department of PSES, University of Idaho, Moscow, ID, US. (April 23, 2009).

Invited seminar: *Potato virus Y*: Diversity and New Necrotic Strains, Department of Plant Pathology, Washington State University, Pullman, WA, US. (December 8, 2008).

Invited guest lecture: *Potato virus Y*: Diversity in Idaho and new necrotic strains, Institut National de la Recherche Agronomique (INRA), Rennes, France. (June 16, 2008).

Invited seminar: Plant virus research in Idaho, Department of Plant Pathology, University of Florida, Lake Alfred, FL, US. (May 5, 2008).

Invited guest lecture cycle: Select topics in plant virology, a series of 5 lectures. National Center for Biotechnology of Kazakhstan, Astana, Kazakhstan. (September 24-28, 2007).

Invited seminar: Plant virus vectors: turning enemies into allies, Department of MMBB, University of Idaho, Moscow, ID, US. (September 14, 2006).

## **SCHOLARSHIP ACCOMPLISHMENTS:**

### **Publications, Exhibitions, Performances, Recitals:**

#### **Refereed:**

##### **Book Chapters:**

Martelli, G.P., A., Agranovsky, A.A., Bar-Joseph, M., Boscia, D., Candresse, T., Coutts, R.H.A., Dolja, V.V., Hu, J.S., Jelkmann, W., **Karasev, A.V.**, Martin, R.R., Minafra, Namba, S., and Vetten, H.-J. (2011). Family *Closteroviridae*. In: Virus Taxonomy. Ninth Report of the International Committee on Taxonomy of Viruses (King, A., Adams, M., Carstens, E., and Lefkowitz, E., editors). Elsevier: Oxford; pp. 987-1002.

Sanfaçon, H., Iwanami, T., **Karasev, A.V.**, van der Vlugt, R., Wellink, J., Wetzel, T. and Yoshikawa, N. (2011). Family *Secoviridae*. In: Virus Taxonomy. Ninth Report of the International Committee on Taxonomy of Viruses (King, A., Adams, M., Carstens, E., and Lefkowitz, E., editors). Elsevier: Oxford; pp. 849-867.

**Karasev, A. V.**, Bar-Joseph, M. (2010). Citrus tristeza virus and taxonomy of closteroviruses. In: *Citrus Tristeza Virus Complex and Tristeza Diseases* (A.V. Karasev and M.E. Hilf, eds); pp. 119-129. St. Paul, MN: American Phytopathological Society Press.

- Karasev, A.V.** (2010). Wheat yellows virus. In: *Compendium of wheat diseases*; pp. 117-118. St Paul, MN: American Phytopathological Society Press.
- Karasev, A.V.** and Martelli, G.P. (2004). Family Closteroviridae. In: *Virus Diseases of Poaceae (Graminae)* (H. Lapiere and P. Signorret, eds.); pp. 358-362. INRA Editions, Versailles, France.
- Karasev, A.V.**, Gowda, S., Bar-Joseph, M., and Dawson, W.O. (2001). Closteroviruses. In: *Encyclopedia of Plant Pathology* (O.C. Maloy and T.D. Murray, eds.); pp. 228-230. John Wiley & Sons: New York, NY.
- Martelli, G.P., Agranovsky, A.A., Bar-Joseph, M., Boscia, D., Candresse, T., Coutts, R.H.A., Dolja, V.V., Duffus, J.E., Falk, B.W., Gonsalves, D., Jelkmann, W., **Karasev, A.V.**, Minafra, A., Murrant, A., Namba, S., Niblett, C.L., Vetter, H.J., and Yoshikawa, N. (2000). Family Closteroviridae. In: *Virus Taxonomy* (M.H.V. Van Regenmortel, C.M. Fauquet, and D.H.L. Bishop, eds); pp. 943-952. Academic Press: San Diego, CA.
- Martelli, G.P., Agranovsky, A.A., Bar-Joseph, M., Boscia, D., Candresse, T., Coutts, R.H.A., Dolja, V.V., Duffus, J.E., Falk, B.W., Gonsalves, D., Jelkmann, W., **Karasev, A.V.**, Minafra, A., Murrant, A., Namba, S., Niblett, C.L., Vetter, H.J., and Yoshikawa, N. (2000). Genus Capillovirus. In: *Virus Taxonomy* (M.H.V. Van Regenmortel, C.M. Fauquet, and D.H.L. Bishop, eds); pp. 952-956. Academic Press: San Diego, CA.
- Martelli, G.P., Agranovsky, A.A., Bar-Joseph, M., Boscia, D., Candresse, T., Coutts, R.H.A., Dolja, V.V., Duffus, J.E., Falk, B.W., Gonsalves, D., Jelkmann, W., **Karasev, A.V.**, Minafra, A., Murrant, A., Namba, S., Niblett, C.L., Vetter, H.J., and Yoshikawa, N. (2000). Genus Trichovirus. In: *Virus Taxonomy* (M.H.V. Van Regenmortel, C.M. Fauquet, and D.H.L. Bishop, eds); pp. 956-960. Academic Press: San Diego, CA.
- Martelli, G.P., Agranovsky, A.A., Bar-Joseph, M., Boscia, D., Candresse, T., Coutts, R.H.A., Dolja, V.V., Duffus, J.E., Falk, B.W., Gonsalves, D., Jelkmann, W., **Karasev, A.V.**, Minafra, A., Murrant, A., Namba, S., Niblett, C.L., Vetter, H.J., and Yoshikawa, N. (2000). Genus Vitivirus. In: *Virus Taxonomy* (M.H.V. Van Regenmortel, C.M. Fauquet, and D.H.L. Bishop, eds); pp. 960-964. Academic Press: San Diego, CA.
- Karasev, A.V.** (1998). Beet mosaic potyvirus. In: *CABI Global Crop Protection Compendium (CD-ROM)*. CAB International: Wallingford, Oxford.
- Karasev, A.V.** (1998) Beet yellows closterovirus. In: *CABI Global Crop Protection Compendium (CD-ROM)*. CAB International: Wallingford, Oxford.
- Karasev, A.V.**, and Hilf, M.E. (1997). Molecular biology of the citrus tristeza virus. In: *Recent Development in Plant Pathology - Filamentous Viruses of Woody Plants* (P. Monette, ed.); pp. 121-131. Research Signpost: Trivandrum, India.
- Smith, H.G., and **Karasev, A.V.** (1996). Beet yellows closterovirus. In: *Viruses of Plants* (A.A. Brunt, K. Crabtree, M.J. Dallwitz, A.J. Gibbs, and L. Watson, eds.); pp. 227-230. CAB International: Wallingford, Oxon, U.K.
- Heathcote, G., Woods, R.D., Nienhaus, F., Fujisawa, I., Smith, H.G., and **Karasev, A.V.** (1996). Beet mosaic potyvirus. In: *Viruses of Plants* (A.A. Brunt, K. Crabtree, M.J. Dallwitz, A.J. Gibbs, and L. Watson, eds.); pp. 210-214. CAB International: Wallingford, Oxon, U.K.
- Waterworth, H., and **Karasev, A.V.** (1996). Bean mild mosaic carmovirus. In: *Viruses of Plants* (A.A. Brunt, K. Crabtree, M.J. Dallwitz, A.J. Gibbs, and L. Watson, eds.); pp. 188-189. CAB International: Wallingford, Oxon, U.K.

## Journals:

(\* - graduate student; \*\* - undergraduate student)

- \*Kanuya, E., Clayton, L.A., Naidu, R.A., and **Karasev, A.V.** (2012) First report of *Grapevine fleck virus* in Idaho grapevines. *Plant Disease* **96**: 1705-1705.
- \*Galvino-Costa, S.B.F., Figueira, A.R., Rabelo-Filho, F.A.C., Moraes, F. H. R., Nikolaeva, O.V., and **Karasev, A.V.** (2012) Molecular typing of *Potato virus Y* isolates from Brazil reveals a diverse set of recombinant strains. *Plant Disease* **96**: 1451-1458.
- Nikolaeva, O.V., \*\*Roop, D., \*Galvino-Costa, S.F.B., Figueira, A.R., Gray, S.M., and **Karasev, A.V.** (2012) Epitope mapping for monoclonal antibodies recognizing tuber necrotic strains of *Potato virus Y*. *American Journal of Potato Research* **89**, 121-128.
- \*Galvino-Costa, S.B., Figueira, A., Camargos, V.V., Geraldino, P.S., \*Hu, X., Nikolaeva, O.V., Kerlan, C., and **Karasev, A.V.** (2012) A novel type of *Potato virus Y* recombinant genome, determined for the genetic strain PVY<sup>E</sup>. *Plant Pathology* **61**, 388-398.
- Vemulapati, B., Druffel, K.L., Eigenbrode, S.D., **Karasev, A.V.**, and Pappu, H.R. (2011) Genomic characterization of *Pea enation mosaic virus-2* from the Pacific Northwestern USA. *Archives of Virology* **156**, 1897-1900.
- Kerlan, C., Nikolaeva, O.V., \*Hu, X., Meacham, T., Gray, S.M., and **Karasev, A.V.** (2011) Identification of the molecular make-up of the *Potato virus Y* strain PVY<sup>Z</sup>: Genetic typing of PVY<sup>Z</sup>-NTN. *Phytopathology* **101**, 1052-1060.
- Karasev, A.V.**, \*Hu, X., Brown, C.J., Kerlan, C., Nikolaeva, O.V., Crosslin, J.M., and Gray, S.M. (2011) Genetic diversity of the ordinary strain of *Potato virus Y* (PVY) and origin of recombinant PVY strains. *Phytopathology* **101**: 778-785.
- Robles-Hernandez, L., Gonzalez-Franco, A.C., Gill-Langarica, E.M., \*\*Sago, C., Nikolaeva, O.V., and **Karasev, A.V.** (2011) First report of *Beet severe curly top virus* in jalapeño pepper in Chihuahua, Mexico. *Plant Disease* **95**, 778-778.
- Gray, S.M., DeBoer, S.H., Lorenzen, J., **Karasev, A.V.**, Whitworth, J., Nolte, P., Singh, R.P., Boucher, A., and Xu, H. (2010) *Potato virus Y*: a significant and evolving threat to potato crops in the United States and Canada – Feature Article. *Plant Disease* **94**, 1384-1397.
- Vemulapati B., Druffel, K.L., Eigenbrode, S., **Karasev, A.V.**, and Pappu, H.R. (2010). Molecular characterization of *Pea enation mosaic virus* and *Bean leaf roll virus* from the Pacific Northwest, USA. *Archives of Virology*. **155**, 1713-1715.
- Robles-Hernández, L., González-Franco A.C., Hernández-Huerta, J., Meacham T.M., Nikolaeva, O.V., and **Karasev, A.V.** (2010) First identification of an unusual recombinant *Potato virus Y* strain in potato in Mexico. *Plant Disease* **94**, 1262-1262.
- \*\*Durrin, J.S., Nikolaeva, O.V., Strausbaugh, C.A., and **Karasev, A.V.** (2010) Immunodetection of two curtoviruses infecting sugar beet. *Plant Disease* **94**, 972-976.
- Karasev, A.V.**, Nikolaeva, O.V., \*Hu, X., \*\*Siellaff, Z., Whitworth, J., Lorenzen, J.H., and Gray, S.M. (2010). Serological properties of ordinary and necrotic isolates of *Potato virus Y*: a case study of PVY<sup>N</sup> misidentification. *Amer. J. Potato Res.* **87**, 1-9.

- \*Hu, X., **Karasev, A.V.**, Brown, C.J., and Lorenzen, J.H. (2009). Sequence characteristics of *Potato virus Y* recombinants. *J. Gen. Virol.* 90, 3033-3041.
- Mekuria, T.A., **Karasev, A.V.**, Martin, R.R., and Rayapati, N.A. (2009). First report of *Grapevine leafroll-associated virus-3* in wine grape cultivars in Idaho. *Plant Dis.* 93, 1218-1218.
- \*Hu, X., Meacham, T., Ewing, L., Gray, S.M., and **Karasev, A.V.** (2009). A novel recombinant strain of *Potato virus Y* suggests a new viral genetic determinant of vein necrosis in tobacco. *Virus Res.* 143, 68-76.
- Bolotova, Y., **Karasev, A.V.**, and McIntosh, C. (2009). Statistical analysis of the laboratory methods used to detect *Potato virus Y*. *Amer. J. Potato Res.* 86, 265–271.
- Sanfaçon, H., Wellink, J., Le Gall, O., **Karasev, A. V.**, van der Vlugt, R., and Wetzel, T. (2009). Secoviridae: a proposed family of plant viruses within the order *Picornavirales* that combines the families *Sequiviridae* and *Comoviridae*, the unassigned genera *Cheravirus* and *Sadwavirus*, and the proposed genus *torradovirus*. *Arch. Virol.* 154, 899-907.
- Karasev, A. V.**, Meacham, T., \*Hu, X., Whitworth, J., Gray, S. M., Olsen, N., Nolte, P. (2008). Identification of PVY strains associated with tuber damage during an outbreak of PVY in potato in Idaho. *Plant Dis.*, 92, 1371-1371.
- Melzer, M. J., Sether, D. M., **Karasev, A. V.**, Borth, W., Hu, J. S. (2008). Complete nucleotide sequence and genome organization of *Pineapple mealybug wilt-associated virus-1*. *Arch. Virol.*, 153, 707-714.
- Le Gall, O., Sanfaçon, H., Ikegami, M., Iwanami, T., Jones, T., **Karasev, A. V.**, Lehto, K., Wellink, J., Wetzel, T., Yoshikawa, N. (2007). *Cheravirus* and *Sadwavirus*: two unassigned genera of plant positive-sense single-stranded RNA viruses formerly considered as atypical members of the genus *Nepovirus* (family *Comoviridae*). *Arch. Virol.* 152, 1767-1764.
- Orita, H., Sakai, J., Kubota, K., Okuda, M., Tanaka, Y., Hanada, K., Imamura, Y., Nishiguchi, M., **Karasev, A. V.**, Iwanami, T. (2007). Molecular and serological characterization of *Cucumber mottle virus*, a new cucurbit-infecting tobamo-like virus. *Plant Dis.*, 91, 1574-1578.
- Wintermantel, W.M., Wisler, G.C., Anchieta, A.G., Liu, H.-Y., **Karasev, A.V.**, and Tzanetakis, I.E. (2005). The complete nucleotide sequence and genome organization of *Tomato Chlorosis Virus*. *Arch. Virol.* 150, 2287-2298.
- Karasev, A.V.**, Foulke, S., Wellens, C., Rich, A., Shon, K.J., \*\*Zwierzynski, I., Hone, D., Koprowski, H., and Reitz, M. (2005) Plant based HIV-1 vaccine candidate: Tat protein produced in spinach. *Vaccine* 23, 1875-1880.
- Ayllón, M.A., Gowda, S., Satyanarayana, T., **Karasev, A.V.**, Adkins, S., Mawassi, M., Guerri, J., Moreno, P., and Dawson, W.O. (2003). Effects of modification of the transcription initiation site context on *Citrus tristeza virus* subgenomic RNAs synthesis. *J. Virol.* 77, 9232-9243.
- Brodzik, R., Deka, D., **Karasev A.V.**, and Koprowski, H. (2002) Pathogenesis of alfalfa mosaic virus in soybean (*Glycine max*) and expression of chimeric rabies peptide in virus-infected soybean plants – a reexamination. *Phytopathology* 92, 1260-1261.
- Martelli, G.P., Agranovsky, A.A., Bar-Joseph, M., Boscia, D., Candresse, T., Coutts, R.H.A., Dolja, V.V., Falk, B.W., Gonsalves, D., Jelkmann, W., **Karasev, A.V.**, Minafra, A., Namba, S., Vetten, H.J., Wisler, G.C., and Yoshikawa, N. (2002) The family *Closteroviridae* revised. *Arch. Virol.*, 147, 2039-2044.



- Han, S.S., **Karasev, A.V.**, Ieki, H., and Iwanami, T. (2002). Nucleotide sequence and taxonomy of *Cycas necrotic stunt virus*. *Arch. Virol.* 147, 2207-2214.
- Yusibov, V., Hooper, D.C., Spitsin, S.V., Fleysh, N., Kean, R.B., Mikheeva, T., Deka, D., **Karasev, A.V.**, Cox, S., Randall, J., and Koprowski, H. (2002). Expression in plants and immunogenicity of plant virus-based experimental rabies vaccine. *Vaccine* 20, 3155-3164.
- G.P. Martelli, A.A. Agranovsky, M. Bar-Joseph, D. Boscia, T. Candresse, R.H.A. Coutts, V.V. Dolja, B.W. Falk, D. Gonsalves, W. Jelkmann, **A.V. Karasev**, A. Minafra, S. Namba, H.J. Vetten, G.C. Wisler, and N. Yoshikawa. (2002) The family Closteroviridae revised. *Arch. Virol.*, 147, 2039-2044.
- Han, S.S., Yoshida, K., **Karasev, A.V.**, and Iwanami, T. (2002). Nucleotide sequence of a Japanese isolate of *Squash mosaic virus*. *Archives of Virology* **147**, 437-443.
- Karasev, A.V.**, Han, S.S., and Iwanami, T. (2001). Satsuma dwarf and related viruses belong to a new lineage of plant picorna-like viruses. *Virus Genes* 23, 45-52.
- Sether, D.M, **Karasev, A.V.**, Okumura, C., Arakawa, C., Zee, F., Kislan, M.M., Busto, J.L., and Hu, J.S. (2001). Differentiation, distribution, and elimination of two different pineapple mealybug wilt associated closteroviruses found in pineapple. *Plant Dis.* 85, 856-864.
- Iwanami, T., Kondo, Y., Kobayashi, M., Han, S.S., and **Karasev, A.V.** (2001). Sequence diversity and interrelationships among isolates of satsuma dwarf-related viruses. *Arch. .Virol.* 146, 807-813 .
- Melzer, M.J., **Karasev, A.V.**, Sether, D.M., and Hu, J.S. (2001). Nucleotide sequence, genome organization, and phylogenetic analysis of pineapple mealybug wilt associated virus-2. *J. Gen. Virol.* 82, 1-7.
- Karasev, A.V.** (2000). Genetic diversity and evolution of closteroviruses. *Ann. Rev. Phytopathol.*38, 293-324.
- Satyanarayana, T., Gowda, S., Boyko, V., Albiach-Marti, R.M., Mawassi, M., Navas-Castillo, J., Hilf, M.E., **Karasev, A.V.**, Dolja, V.V., Lewandowski, D.J., Moreno, P., Bar-Joseph, M., Garnsey, S.M., and Dawson, W.O. (1999). An engineered closterovirus RNA replicon and analysis of heterologous terminal sequences for replication. *Proc. . Nat. Acad. .Sci. U.S.A.* 96, 7433-7438.
- Hilf, M.E., **Karasev, A.V.**, Albiach-Marti, M.R., Dawson, W.O., and Garnsey, S.M. (1999). Two paths of sequence divergence in the citrus tristeza virus complex. *Phytopathology* 89, 336-342.
- Iwanami, T., Kondo, Y., and **Karasev, A.V.** (1999). Nucleotide sequence and taxonomy of satsuma dwarf virus. *J. Gen. Virol.* 80, 793-797.
- Karasev, A.V.**, Nikolaeva, O.V., Lee, R.F., Wisler, G.C., Duffus, J.E., and Dawson, W.O. (1998). Characterization of the beet yellow stunt virus coat protein gene. *Phytopathology* 88, 1040-1045.
- Nikolaeva, O.V., **Karasev, A.V.**, Garnsey, S.M., and Lee, R.F. (1998). Serological differentiation of the citrus tristeza virus isolates causing stem-pitting in sweet orange. *Plant Dis.* 82, 1276-1280.
- Karasev, A.V.**, Dawson, W.O., Hilf, M.E., and Garnsey, S.M. (1998). Molecular biology of the citrus tristeza virus: implications for disease diagnosis and control. *Acta Hort.* 472, 333-337.

- Nikolaeva, O.V., **Karasev, A.V.**, Powell, C.A., Garnsey, S.M., and Lee, R.F. (1997). Modulation of the antigenic reactivity of the citrus tristeza virus coat protein. *J. Immunol. Methods* 206, 97-105.
- Karasev, A.V.**, Hilf, M.E., Garnsey, S.M., and Dawson, W.O. (1997). Transcriptional strategy of closteroviruses: mapping the 5'-termini of the citrus tristeza virus subgenomic RNAs. *J. Virol.* 71, 6233-6236.
- Karasev, A.V.**, Nikolaeva, O.V., Mushegian, A.R., Lee, R.F., and Dawson, W.O. (1996). Organization of the 3'-terminal half of beet yellow stunt virus genome and implications for the evolution of closteroviruses. *Virology* 221, 199-207.
- Nikolaeva, O.V., **Karasev, A.V.**, Powell, C.A., Gumpf, D.J., Garnsey, S.M., and Lee, R.F. (1996). Mapping of epitopes for citrus tristeza virus-specific monoclonal antibodies using bacterially expressed coat protein fragments. *Phytopathology* 86, 974-979.
- Nikolaeva, O.V., **Karasev, A.V.**, Gumpf, D.J., Lee, R.F., and Garnsey, S.M. (1995). Production of polyclonal antisera to the coat protein of citrus tristeza virus expressed in *Escherichia coli*: application for immunodiagnosis. *Phytopathology* 85, 691-694.
- Hilf, M.E., **Karasev, A.V.**, Pappu, H.R., Gumpf, D.J., Niblett, C.L., and Garnsey, S.M. (1995). Characterization of citrus tristeza virus subgenomic RNAs in infected tissue. *Virology* 208, 576-582.
- Mawassi, M., Mitkiewska, E., Hilf, M.E., Ashoulin, L., **Karasev, A.V.**, Gafny, R., Lee, R.F., Garnsey, S.M., Dawson, W.O., and Bar-Joseph, M. (1995). Multiple species of defective RNAs in plants infected with citrus tristeza virus. *Virology* 214, 264-268.
- Mawassi, M., **Karasev, A.V.**, Mietkiewska, E., Gafny, R., Lee, R.F., Dawson, W.O., and Bar-Joseph, M. (1995). Defective RNA molecules associated with citrus tristeza virus. *Virology* 208, 383-387.
- Karasev, A.V.**, Boyko, V.P., Gowda, S., Nikolaeva, O.V., Hilf, M.E., Koonin, E.V., Niblett, C.L., Cline, K., Gumpf, D.J., Lee, R.F., Garnsey, S.M., and Dawson, W.O. (1995). Complete sequence of the citrus tristeza virus RNA genome. *Virology* 208, 511-520.
- Karasev, A.V.**, Nikolaeva, O.V., Koonin, E.V., Gumpf, D.J., and Garnsey, S.M. (1994). Screening of the closterovirus genome by degenerate primer-mediated polymerase chain reaction. *J. Gen. Virol.* 75, 1415-1422.
- Pappu, H.R., **Karasev, A.V.**, Anderson, E.J., Pappu, S.S., Hilf, M.E., Febres, V.J., Eckloff, R.M.G., McCaffery, M., Boyko, V.P., Gowda, S., Dolja, V.V., Koonin, E.V., Lee, R.F., Gumpf, D.J., Cline, K., Garnsey, S.M., Dawson, W.O., and Niblett, C.L. (1994). Nucleotide sequence and organization of eight 3' open reading frames of the citrus tristeza closterovirus genome. *Virology* 199, 35-46.
- Dolja, V.V., **Karasev, A.V.**, and Koonin, E.V. (1994). Molecular biology and evolution of closteroviruses: sophisticated build-up of large RNA genomes. *Ann. Rev. Phytopathol.* 32, 261-285.
- Rogov, V.V., **Karasev, A.V.**, and Agranovsky, A.A. (1993). Purification and some properties of an isolate of beet yellows virus from Ukraine. *J. Phytopathol.* 137, 79-88.
- Rogov, V.V., Solomyakina, S.N., and **Karasev, A.V.** (1992). Survey of two beet viruses in South Kazakhstan and Central Asia. *Ann. Applied Biol.* 120, 435-441.

- Boyko, V.P., **Karasev, A.V.**, Agranovsky, A.A., Koonin, E.V., and Dolja, V.V. (1992). Capsid protein gene duplication in a filamentous RNA virus of plants. *Proc. Nat. Acad. Sci., U.S.A.* 89, 9156-9160.
- Karasev, A.V.**, Kashina, A.S., Gelfand, V.I., and Dolja, V.V. (1992). HSP70-related 65-kDa protein of beet yellows closterovirus is a microtubule-binding protein. *FEBS Lett.* 304, 12-14.
- Boyko, V.P., and **Karasev, A.V.** (1992). Tombusvirus genome may encode the sixth small protein near its 3' terminus. *Virus Genes* 6, 143-148.
- Agranovsky, A.A., **Karasev, A.V.**, Novikov, V.K., Lunina, N.A., Loginov, S., and Tyulkina, L.G. (1992). Poa semilatifolius virus, a hordeivirus having no internal polydisperse poly(A) in the 3' non-coding region of the RNA genome. *J. Gen. Virol.* 73, 2085-2092.
- Rogov, V.V., **Karasev, A.V.**, Agranovsky, A.A., and Gorbunova, N.I. (1991). Characterization of an isolate of beet mosaic virus from South Kazakhstan. *Plant Pathol.* 40, 515-523.
- Morozov, S.Yu., Miroshnichenko, N.A., Solovijev, A.G., Fedorkin, O.N., Zelenina, D.A., Lukasheva, L.I., **Karasev, A.V.**, Dolja, V.V., and Atabekov, J.G. (1991). Expression strategy of the potato virus X triple gene block. *J. Gen. Virol.* 72, 2039-2042.
- Agranovsky, A.A., Boyko, V.P., **Karasev, A.V.**, Koonin, E.V., and Dolja, V.V. (1991). Putative 65 kDa protein of beet yellows closterovirus is a homologue of HSP70 heat shock proteins. *J. Mol. Biol.* 217, 603-610.
- Agranovsky, A.A., Boyko, V.P., **Karasev, A.V.**, Lunina, N.A., Koonin, E.V., and Dolja, V.V. (1991). Nucleotide sequence of the 3'-terminal half of beet yellows closterovirus RNA genome: unique arrangement of eight virus genes. *J. Gen. Virol.* 72, 15-23.
- Karasev, A.V.**, Chirkov, S.N., Kaftanova, A.S., Miroshnichenko, N.A., Surgucheva, N.A., and Fedotina, V.L. (1989). Characterization of bean mild mosaic virus: particle morphology, composition and RNA cell-free translation. *Intervirology* 30, 285-293.
- Karasev, A.V.**, Agranovsky, A.A., Rogov, V.V., Miroshnichenko, N.A., Dolja, V.V., and Atabekov, J.G. (1989). Virion RNA of beet yellows closterovirus: cell-free translation and some properties. *J. Gen. Virol.* 70, 241-245.
- Karasev, A.V.**, Miroshnichenko, N.A., and Rozanov, M.N. (1989). Anomalous electrophoretic behaviour of the major potato virus X RNA translation product. *J. Virol. Methods* 23, 223-227.
- Karasev, A.V.**, Miroshnichenko, N.A., and Ugarova, T.Yu. (1989). Use of Krebs-2 ascites extracts for plant virus RNA translation. *Molecular Biology (Moscow)* 23, 119-126 (in Russian).
- Karasev, A.V.**, Alexandrova, N.M., Miroshnichenko, N.A., Nesterova, I.V., and Dorokhov, Yu.L. (1987). Translational activity of mRNAs isolated from potato virus X-infected plants. *Molecular Biology (Moscow)* 21, 1367-1377 (in Russian).
- Karasev, A.V.** and Dobrov, E.N. (1988). Some properties of linear double-stranded DNAs in particles of medium-size bacteriophages. *Int. J. Biol. Macromol.* 10, 227-237.

## Abstracts and Proceedings:

(\* - graduate student; \*\* - undergraduate student)

- \*Feng, X., Poplawsky, A.R., Nikolaeva, O.V., Myers, J.R., and **Karasev, A.V.** (2012) Genome sequences of two field isolates of *Bean common mosaic virus*. *Phytopathology* 102: S6.9. Abstracts of the Annual Meeting of the Pacific Division of the American Phytopathological Society, June 28-29, 2012; Sacramento, CA.
- \*Evans, K.J., Gray, S.M., and **Karasev, A.V.** (2012) Evolution of *Potato virus Y* and origin of tuber necrotic recombinant strains. P7-3: Abstracts of the 31<sup>st</sup> Annual Meeting of the American Society for Virology, July 21-25, 2012; Madison, WI.
- Karasev, A.V.** and Gray, S.M. (2012) Classification of PVY strains and new recombinants. *Phytopathology* 102: S4.149. Abstracts of the Annual Meeting of the American Phytopathological Society, August 4-8, 2011; Providence, RI.
- \*Kanuya, E., Clayton, L.A., Naidu, R.A., and **Karasev, A.V.** (2012) Survey of viruses present in wine grapes in Idaho. *Phytopathology* 102: S4.61. Abstracts of the Annual Meeting of the American Phytopathological Society, August 4-8, 2011; Providence, RI.
- Poplawsky, A.R., Nikolaeva, O.V., \*Feng, X., Myers, J.R., and **Karasev, A.V.** (2012) Characterization of two field isolates of *Bean common mosaic virus*. *Phytopathology* 102: S4.93. Abstracts of the Annual Meeting of the American Phytopathological Society, August 4-8, 2011; Providence, RI.
- Poplawsky, A.R., Eid, S., and **Karasev, A.V.** (2012) Host range studies of a *Beet curly top virus* (Logan) infectious clone. *Phytopathology* 102: S4.93. Abstracts of the Annual Meeting of the American Phytopathological Society, August 4-8, 2011; Providence, RI.
- Karasev, A.V.**, Nikolaeva, O.V., \*\*Roop, D.J., Galvino-Costa, S.B.F., Figueira, A.R., and Gray, S.M. (2012) Antigenic structure of *Potato virus Y*. *Phytopathology* 102: S4.62. Abstracts of the Annual Meeting of the American Phytopathological Society, August 4-8, 2011; Providence, RI.
- Harveson, R., Gulya, T., **Karasev, A.V.**, Lenardon, S. (2012) The appearance of an unknown viruslike disease of sunflowers in Nebraska. *Phytopathology* 102: S4.51. Abstracts of the Annual Meeting of the American Phytopathological Society, August 4-8, 2011; Providence, RI.
- Robles-Hernandez, L., **Karasev, A.V.**, and Gonzalez-Franco, A.C. (2012) Incidence of virus infecting pepper (*Capsicum annuum* L.) in two main pepper-producing regions of Chihuahua, Mexico. *Phytopathology* 102: S4.101. Abstracts of the Annual Meeting of the American Phytopathological Society, August 4-8, 2011; Providence, RI.
- Chikh Ali, M., Maoka, T., Natsuaki, T., and **Karasev, A.V.** (2012) A new recombinant *Potato virus Y* isolate classified as belonging to PVY<sup>Z</sup> strain group may help to define viral determinant responsible for tuber necrosis in potato. *Phytopathology* 102: S.4.23. Abstracts of the Annual Meeting of the American Phytopathological Society, August 4-8, 2011; Providence, RI.
- Chikh Ali, M., **Karasev, A.V.**, Furutani, N., Taniguchi, M., Kano, Y., Sato, M., Natsuaki, T., and Maoka, T. (2012) An outbreak of the *Potato virus Y*<sup>NTN</sup> (PVY<sup>NTN</sup>) strain in foundation seed potatoes in Japan. *Phytopathology* 102: S4.23. Abstracts of the Annual Meeting of the American Phytopathological Society, August 4-8, 2011; Providence, RI.

- \*Rowley, J.S. and **Karasev, A.V.** (2012) Interactions between strains of *Potato virus Y* circulating in North America and *N* genes in potato. Abstracts of the 96<sup>th</sup> Annual Meeting of the Potato Association of America, August 12-16, 2011; Denver, CO.
- \*Rowley, J.S., Nikolaeva, O.V., and **Karasev, A.V.** (2012) Development of immunodetection systems for six potato viruses using genetic engineering and biotechnology. Abstracts of the 96<sup>th</sup> Annual Meeting of the Potato Association of America, August 12-16, 2011; Denver, CO.
- \*Quintero-Ferrer, A., Robles-Hernandez, L., Gonzalez-Franco A.C., Kerlan, C., and **Karasev, A.V.** (2012) Molecular and biological characterization of a recombinant isolate of *Potato virus Y* from Mexico. Abstracts of the 96<sup>th</sup> Annual Meeting of the Potato Association of America, August 12-16, 2011; Denver, CO.
- \*Quintero-Ferrer, A. and **Karasev, A.V.** (2012) Preliminary survey of *Potato virus Y* isolates circulating in potato in Jalisco, Mexico. Abstracts of the 96<sup>th</sup> Annual Meeting of the Potato Association of America, August 12-16, 2011; Denver, CO.
- Karasev, A.V.**, Nikolaeva, O.V., and Gray, S.M. (2012) Serological typing of tuber necrotic PVY strains. Abstracts of the 96<sup>th</sup> Annual Meeting of the Potato Association of America, August 12-16, 2011; Denver, CO.
- Karasev, A.V.**, \*Hu, X., Brown, C.J., Kerlan, C., Nikolaeva, O.V., Crosslin, J.M., and Gray, S.M. (2011) Genetic diversity of *Potato virus Y<sup>O</sup>* and origin of recombinant PVY strains. *Phytopathology* 101: S88. Abstracts of the Annual Meeting of the American Phytopathological Society, August 6-11, 2011; Honolulu, HI.
- Karasev, A.V.**, \*Blades, B.S., and Poplawsky, A.R. (2011) Aphid transmission of *Beet yellows virus* in a model system. *Phytopathology* 101: S230. Abstracts of the Annual Meeting of the American Phytopathological Society, August 6-11, 2011; Honolulu, HI.
- Eid, S., \*Durrin, J.S., Nikolaeva, O.V., and **Karasev, A.V.** (2011) A non-structural, p17 protein of *Potato leafroll virus* co-localizes in plant phloem tissue with virus capsid protein. *Phytopathology* 101: S47. Abstracts of the Annual Meeting of the American Phytopathological Society, August 6-11, 2011; Honolulu, HI.
- \*Galvino-Costa, S.B.F., Figueira, A.R., \*Hu, X., Kerlan, C., and **Karasev, A.V.** (2011) A novel type of *Potato virus Y* recombinant genome. *Phytopathology* 101: S57. Abstracts of the Annual Meeting of the American Phytopathological Society, August 6-11, 2011; Honolulu, HI.
- \*Galvino-Costa, S.B.F., Figueira, A.R., Nikolaeva, O.V., and **Karasev, A.V.** (2011) An unusual serological reactivity revealed in isolates of *Potato virus Y* from Brazil. *Phytopathology* 101: S57. Abstracts of the Annual Meeting of the American Phytopathological Society, August 6-11, 2011; Honolulu, HI.
- \*Galvino-Costa, S.B.F., Figueira, A.R., Camargos, V.V., Geraldino, P.S., Nikolaeva, O.V., and **Karasev, A.V.** (2011) Molecular typing of *Potato virus Y* isolates from Brazil reveals a history of introduction of necrotic strains. *Phytopathology* 101: S57. Abstracts of the Annual Meeting of the American Phytopathological Society, August 6-11, 2011; Honolulu, HI.
- Robles-Hernández, L., González-Franco A.C., Hernández-Huerta, J., Meacham T.M., and **Karasev, A.V.** (2011) Survey of *Potato virus Y* isolates in potato in Chihuahua, Mexico. *Phytopathology* 101: S154. Abstracts of the Annual Meeting of the American Phytopathological Society, August 6-11, 2011; Honolulu, HI.

- Robles-Hernandez, L., Gonzalez-Franco A.C., Gill-Langarica, E.M., Nikolaeva, O.V., and **Karasev, A.V.** (2011) Identification of curly top virus infection in Jalapeño pepper in Chihuahua, Mexico. *Phytopathology* 101: S154. Abstracts of the Annual Meeting of the American Phytopathological Society, August 6-11, 2011; Honolulu, HI.
- Woodell, L.K., **Karasev, A.V.**, and Olsen, N. (2011) Utilizing pathogen detection test kits for rapid in-field *Potato virus Y* diagnosis. Abstracts of the 95<sup>th</sup> Annual Meeting of the Potato Association of America, August 14-18, 2011; Wilmington, NC.
- Karasev, A.V.** (2010) Genetic diversity of *Potato virus Y*: a new challenge for plant quarantine services. Abstracts of the 43<sup>rd</sup> Brazilian Congress of Phytopathology, August 15-19, 2010, Cuiabá –MT, Brazil.
- Kerlan, C., Marhadour, S., and **Karasev, A.V.** (2010) A novel source of hypersensitive resistance against the PVY<sup>N</sup> strain of *Potato virus Y* (PVY) in an unidentified potato cultivar. Abstracts of the 94th Annual Meeting of the Potato Association of America, August 15-19, 2010; Corvallis, OR.
- Kerlan, C., Nikolaeva, O.V., \*Hu, X., Meacham, T., Gray, S.M., and **Karasev, A.V.** (2010) Identification of the molecular make-up of the *Potato virus Y* strain PVY<sup>Z</sup>. Abstracts of the Annual Meeting of the American Phytopathological Society, August 7-11, 2010; Charlotte, NC.
- \*\*Durrin, J.S., Ju, H.J., Nikolaeva, O.V., Gray, S.M., and **Karasev, A.V.** (2010) Investigation of a possible role of a non-structural p17 protein of Potato leafroll virus in aphid transmission. Abstracts of the 2010 Annual Meeting of the American Society for Virology, July 17-21, 2010; Bozeman, MT, W11-10.
- Karasev, A.V.**, González-Franco A.C., Robles-Hernández, L., Hernández-Huerta, J., and Meacham T.M. (2010) Identificación de una cepa rara de PVY en papa del estado de Chihuahua, México. Abstracts of the XII Congreso/XXXVI Nacional de la Sociedad Mexicana de Fitopatología, July 4-8, 2010; Merida, Mexico.
- Robles-Hernández, L., González-Franco A.C., Hernández-Huerta, J., Meacham T.M., and **Karasev, A.V.** (2010) Identification of an Unusual Recombinant *Potato Virus Y* Strain in Potato in North-central Mexico. Abstracts of the Western Regional Meeting of the American Society of Plant Biologists, April 30-May 2, 2010; Pullman, WA, #37.
- Karasev, A.V.**, \*Hu, X., and Gray, S.M. (2009) Sequencing the North American collection of Potato virus Y isolates: applications to identification of disease determinants and strain differentiation. Abstracts of the 93rd Annual Meeting of the Potato Association of America, August 9-14, 2009; Fredericton, NB, #62.
- \*Hu, X., Meacham, T., Ewing, L., Gray, S.M., and **Karasev, A.V.** (2009) A novel recombinant strain of *Potato virus Y* suggests a new viral genetic determinant of vein necrosis in tobacco. Abstracts of the 2009 Annual Meeting of the American Society for Virology, July 11-15, 2009; Vancouver, BC, W16-12.
- Karasev, A.V.**, Dibble, M., and Gray, S.M. (2009) A non-structural p17 protein of *Potato leafroll virus* is involved in aphid transmission. Abstracts of the 2009 Annual Meeting of the American Society for Virology, July 11-15, 2009; Vancouver, BC, W31-7.
- Nikolaeva, O.V., \*Hu, X., \*\*Sielaff, Z., and **Karasev, A.V.** (2009) Antigenic structure and immunoreactivity of *Potato virus Y*. Abstracts of the 2009 Annual Meeting of the American Society for Virology, July 11-15, 2009; Vancouver, BC, P21-2.

- \*\*Durrin, J.S., Nikolaeva, O.V., Strausbaugh, C.A., and **Karasev, A.V.** (2009) Immunodetection of the *Beet curly top virus* complex in beans and sugar beet in Idaho. *Phytopathology* **99**: S30.
- Karasev, A.V.**, Poplawsky, A.R., \*Blades, B.S., Dibble, M., Ding, H., Dolja, V.V., and Eigenbrode, S.D. (2009) *Nicotiana benthamiana* as a model plant to study aphid transmission of plant viruses. *Phytopathology* **99**: S61.
- Poplawsky, A.R., \*Blades, B.S., Dolja, V.V., and **Karasev, A.V.** (2009) Systemic spread of *Beet yellows virus* following aphid inoculation. *Phytopathology* **99**: S103.
- Whitworth, J.L., Gray, S.M., **Karasev, A.V.**, and Lorenzen, J.H. (2009) Tuber symptoms are induced in potato by a range of *Potato virus Y* strains. *Phytopathology* **99**: S141.
- Karasev, A.V.**, Meacham, T., \*Hu, X., Whitworth, J., Gray, S.M., Olsen, N., and Nolte, P. (2008) Outbreak of tuber necrotic PVY in commercial potato fields in Idaho. Abstracts of the 2008 Annual Meeting of the American Society for Virology, July 12-16, 2008; Ithaca, NY, P18-8.
- \*\*Durrin, J.S., Nikolaeva, O.V., and **Karasev, A.V.** (2008) Antigenic structure and immunodetection of *Potato leafroll virus*. Abstracts of the 2008 Annual Meeting of the American Society for Virology, July 12-16, 2008; Ithaca, NY, P18-6.
- Karasev, A.V.**, Dolja, V.V., Guaragna, M.A., and Jordan, R. (2008) Two viruses are associated with carnation necrotic fleck disease. *Phytopathology* **98**: S78.
- \*Hu, X., Meacham, T., Ewing, L., and **Karasev, A.V.** (2008) A new PVY strain from Idaho: an NTN recombinant which causes no veinal necrosis in tobacco. *Phytopathology* **98**: S69.
- Gray, S., **Karasev, A.**, Lorenzen, J., Whitworth, J., Nolte, P., and Perry, K. (2008) Emerging diversity in *Potato virus Y* poses new challenges for the U.S. potato industry. *Phytopathology* **98**: S61.
- Whitworth, J.L., Gray, S.M., **Karasev, A.V.**, and Lorenzen, J.H. (2008) Developing and validating a greenhouse bioassay for Potato tuber necrotic ringspot disease (PTNRD) associated with *Potato virus Y*. *Phytopathology* **98**: S170.
- Karasev, A.V.**, V.V. Dolja, and Jordan, R. (2008) Two viruses are associated with carnation necrotic fleck disease. Abstracts of the International Congress of Virology, August 11-15, 2008; Istanbul, Turkey.
- Karasev, A.V.** (2007) Plant virus-based vectors for production of biomedical. *Phytopathology* **97**: S144.
- Langham, M., Tolin, S., Sutula, C., Schwartz, H., Wisler, G., **Karasev, A.V.**, Hershman, D., Gisler, L., Golod, J., Ratcliffe, S., and Cardwell, K. (2007) Legume/Virus PIPE – A new tool for disease management in legumes. *Phytopathology* **97**: S61.
- Karasev, A.V.**, Ewing, L., Meacham, T., Laug, S., and Boze, D. (2007) RT-PCR based testing in production of virus-free potato lines in Idaho. Abstracts of the 91<sup>st</sup> PAA Meeting, Idaho Falls, ID; abs. #018.
- Karasev, A.V.**, Koprowski, H. (2005) Virus vectors for production of vaccines in plants. *Phytopathology* **95**: S51.
- Karasev, A.V.**, and Koprowski, H. (2004). *Tobacco mosaic virus* – A versatile tool for production of biomedical in plants. *Phytopathology* **94**: S49.

- Karasev, A.V.**, and Koprowski, H. (2004). HIV and anthrax vaccines produced in plants. *Abstracts of the International Symposium "Plant derived Vaccines and Antibodies: Prospects and Limitations"*, Annecy, France, p. 41.
- Karasev, A.V.**, Aiamkitsumrit, B., and Koprowski, H. (2004). Development of a Plant Based Vaccine against *Bacillus anthracis*. *ASM Biodefense 2003 Meeting, Baltimore, MD, abs. #63*.
- Karasev, A.V.**, and Koprowski, H. (2003). Vaccine production using plant virus vectors. *Sixth Annual Conference on Vaccine Research, Arlington, VA, abs. #S1, p. 46*.
- Karasev, A.V.**, Wellens, C., Rich, A., Zwierzynski, I., Zwierzynski, M., and Koprowski, H. (2003). Plant-based HIV-1 vaccine candidate: tat protein produced in spinach. *AIDS Vaccine 2003 International Conference, New York City, NY, abs. #330, p. 154*.
- Karasev, A.V.**, Aiamkitsumrit, B., and Koprowski, H. (2003). Production of the *Bacillus anthracis* protective antigen fragments in plants. *ASM Biodefense 2003 Meeting, Baltimore, MD, abs. #73, p. 33*.
- Karasev, A.V.**, Shon, K.J., Aiamkitsumrit, B., Zwierzynski, I., and Koprowski, H. (2003). Tat protein production in plants: a new approach to mucosal delivery of an HIV-1 vaccine candidate. *10<sup>th</sup> Conference on Retroviruses and Opportunistic Infections, Boston, MA, abs. #422, p. 206*.
- Karasev, A.V.**, Kim, B.V., Shon, K.J., and Koprowski, H. (2002). Production of HIV-1 vaccine components in plants using virus vectors. *94<sup>th</sup> Annual Meeting of the American Phytopathological Society, Milwaukee, WI. Phytopathology 92: S105*.
- Karasev, A.V.**, Kim, B.V., Shon, K.J., and Koprowski, H. (2001). Production of HIV-1 vaccine components in plants. *J. Human Virol. 4: 140*.
- Karasev, A.V.**, Kim, B.V., Shon, K.J., and Koprowski, H. (2001) Production of the HIV-1 tat protein in plants using a virus-based vector system. *93<sup>rd</sup> Annual Meeting of the American Phytopathological Society, Salt Lake City, UT. Phytopathology 91: S46*.
- Karasev, A.V.**, Kim, B.V., Shon, K.J., and Koprowski, H. (2001) Production of the HIV-1 tat protein in plants. *20th Meeting of the American Society for Virology, Madison, WI, W27-2*.
- Karasev, A.V.**, Kim, B.V., and Koprowski, H. (2001) Production of HIV-1 vaccine components in plants. *Abstracts of the 101<sup>st</sup> Meeting of the American Society for Microbiology, Orlando, FL, p.691*.
- Karasev, A.V.** (2000). Genetic diversity and evolution of closteroviruses. *92<sup>nd</sup> Annual Meeting of the American Phytopathological Society, Aug. 12-16, 2000, New Orleans, LA*.
- Karasev, A.V.**, Spitsin, S., Mikheeva, T., Fleysh, N., Kim, B.V., Koprowski, H., and Yusibov, V. (2000). Expression of linear epitopes of the HIV-1 surface glycoprotein in plants as translational fusions assembled into virus particles of alfalfa mosaic virus. *19th Meeting of the American Society for Virology, For Collins, CO, W9-7*.
- Karasev, A.V.** (1999). Genetic diversity and evolution of closteroviruses. *1<sup>st</sup> Workshop on Virus Evolution, Oct. 21-24, 1999, Ardmore, OK*.
- Karasev, A.V.**, Jordan, R.L., Garnsey, S.M., and Dawson, W.O. (1998). Aphid-transmitted closteroviruses: genome organization and evolution. *Phytopathology 88: S46*.



- Karasev, A.V.** and Dawson, W.O. (1998) Closterovirus transcription: an alphavirus-like mechanism in a coronavirus-like genome. *17th Meeting of the American Society for Virology, Vancouver, British Columbia (Canada)*, W41-8.
- Karasev, A.V.**, Nikolaeva, O.V., Duffus, J.E., Lee, R.F., and Dawson, W.O. (1997). Beet yellow stunt virus coat protein gene: expression *in vivo* and *in vitro*. *Phytopathology* **87**: S50.
- Nikolaeva, O. V., **Karasev, A.V.**, Garnsey, S.M., Dawson, W.O. and Lee, R.F. (1997). Antigenic structure of citrus tristeza virus. *Phytopathology* **87**: S70.
- Karasev, A.V.**, Hilf, M.E., Garnsey, S.M., and Dawson, W.O. (1997). Molecular biology of the citrus tristeza virus: implications for disease diagnosis and control. *Abstracts of the 17th International Symposium on Virus and Virus-like Diseases of Temperate Fruit Crops, Bethesda, MD*; p. 45.
- Karasev, A.V.**, Hilf, M.E., Mawassi, M., Bar-Joseph, M., Garnsey, S.M., and Dawson, W.O. (1996). Striking genotype diversity among isolates of the citrus tristeza virus. *Xth International Congress of Virology, Jerusalem, Israel* (abstr. W61-2) .
- Karasev, A.V.**, Nikolaeva, O.V., Lee, R.F., and Dawson, W.O. (1996). Organization of the beet yellow stunt virus genome - a new genus in the family *Closteroviridae* ? *15th Meeting of the American Society for Virology, London (Ont.), Canada*, p. 164.
- Nikolaeva, O.V., **Karasev, A.V.**, Powell, C.A., Gumpf, D.J., Garnsey, S.M., and Lee, R.F. (1996). Mapping of epitopes for citrus tristeza virus-specific monoclonal antibodies using cloned fragments of the coat protein. *15th Meeting of the American Society for Virology, London (Ont.), Canada*, p. 161.
- Mawassi, M., **Karasev, A.V.**, Mitkiewska, E., Gafny, R., Lee, R.F., Dawson, W.O., and Bar-Joseph, M. (1995). Defective RNA molecules associated with citrus tristeza virus. *XIIIth Conference of the International Organization of Citrus Virologists, Fuzhou, China*, p. 33.
- Karasev, A.V.**, Hilf, M.E., Garnsey, S.M., and Dawson, W.O. (1995). Transcriptional strategy of citrus tristeza virus: mapping 5' termini of subgenomic RNAs. *14th Meeting of the American Society for Virology, Austin, TX*, p. 95.
- Hilf, M.E., **Karasev, A.V.**, Garnsey, S.M., and Dawson, W.O. (1995). Structure of citrus tristeza virus populations: genetic variation underrepresented by PCR as revealed by Northern blot hybridization. *14th Meeting of the American Society for Virology, Austin, TX*, p. 118.
- Karasev, A.V.**, Boyko, V.P., Gowda, S., Nikolaeva, O.V., Gumpf, D.J., Garnsey, S.M., Lee, R.F., and Dawson, W.O. (1994). Cloning and sequencing the 5' terminal two-thirds of the citrus tristeza virus genome. *American Phytopathological Society Annual Meeting, Albuquerque, NM*, A318.
- Karasev, A.V.**, Nikolaeva, O.V., Gumpf, D.J., Garnsey, S.M., and Dawson, W.O. (1994). Beet yellow stunt and carnation necrotic fleck viruses represent two related virus groups within the family *Closteroviridae*. *American Phytopathological Society Annual Meeting, Albuquerque, NM*, A714.
- Hilf, M.E., **Karasev, A.V.**, Pappu, H., Gumpf, D.J., Niblett, C.L., and Garnsey, S.M. (1994). Northern blot analysis of citrus tristeza virus subgenomic RNAs. *13th Meeting of the American Society for Virology, Madison, WI*, p.103.
- Karasev, A.V.**, and Gumpf, D.J. (1993). Screening of the closterovirus genome by degenerate primer-mediated PCR. *12th Meeting of the American Society for Virology, Davis, CA*,

p. A43.

Pappu, H.R., **Karasev, A.V.**, Anderson, E.J., Pappu, S.S., Lee, R.F., Dolja, V.V., Koonin, E.V., Gumpf, D.J. and Niblett, C.L. (1993). Citrus tristeza virus represents a new group of viruses encoding an HSP70 protein. *IXth International Congress of Virology, Glasgow*,

**Karasev, A.V.**, Grama, D.P., and Dolja V.V. (1990). In vitro translation of potato virus X double-stranded RNAs. *VIIIth International Congress of Virology, Berlin*, p.473.

Agranovsky, A.A., **Karasev, A.V.**, Boyko, V.P., Dolja, V.V., and Atabekov, J.G. (1990). Structure and expression of beet yellows closterovirus genome. *VIIIth International Congress of Virology, Berlin*, p.478.

#### **Peer Reviewed/Evaluated:**

##### **Extension Publications:**

Nolte, P., **Karasev, A.**, Whitworth, J., Thornton, M., and Johnson, J. (2008). Important Potato Mosaic Virus Information. *University of Idaho, Special Bulletin, April 16, 2008*. 2 pp.

##### **Abstracts and Proceedings:**

**Karasev, A.V.**, Bolotova, Y., Meacham, T., and Nikolaeva, O.V. (2008) PVY detection in potato leaves and tubers in Idaho: comparison of RT-PCR and ELISA in a realistic setting, and cost benefit analysis for the two methods. *In: Proceedings of the Winter Commodity Schools* (W.H. Bohl, P. Nolte, D. Morishita, J. Windes, and G. Shewmaker, eds.). University of Idaho Cooperative Extension System, Aberdeen, ID. pp. 119-127.

#### **Other:**

##### **Popular press, interview articles, newspaper articles, newsletter articles:**

**Karasev, A.V.** (2012) Potato virus research at Moscow campus. *Potato Grower Magazine*, February 2012; p. 36.

**Karasev, A.V.** (2012) Assisting with breeding for resistance to curly top. *The Sugarbeet, Spring 2012*; p. 8.

Olsen, N., Woodell, L., Miller, J., Wharton, P., **Karasev, A.**, Thornton, M., and Nolte, P. (2011) Taking the test: Diagnosing diseases in storage and in the field. *Potato Grower Magazine*, July 2011; pp. 26-28.

**Karasev, A.V.** and Nolte, P. (2011) Taking precautions: Keeping the industry clean of PVY. *Potato Grower Magazine*, January 2011; pp. 54-55.

**Karasev, A.V.** (2010) Sugarbeet Curly Top Assay. *The Sugarbeet, Spring 2010*, pp. 20-21.

##### **Research review presentations:**

Karasev, A.V., Nolte, P., Whitworth, J., Idaho Potato Commission Research Review. Development of a molecular assay to identify major potato viruses. Mar. 2007.

Karasev, A.V., Nolte, P., Bolotova, Y.V., McIntosh, C.S., Whitworth, J., Boze, D., Idaho Potato Commission research Review. Development, economic analysis, and validation of laboratory assays to identify potato viruses in dormant tubers. March 2007.

Karasev, A.V., Bosque-Perez, N., Idaho Wheat Commission Research Review. Research on virus diseases of small grain crops in Idaho. Feb. 2008.

Karasev, A.V., Bosque-Perez, N., Idaho Barley Commission Research Review. Research on virus diseases of small grain crops in Idaho. Feb. 2008.

Karasev, A.V., Nolte, P., Bolotova, Y.V., McIntosh, C.S., Whitworth, J., Boze, D., Idaho Potato Commission Research Review. Development, economic analysis, and validation of laboratory assays to identify potato viruses in dormant tubers. March 2008.

Karasev, A.V., Ewing, L., Idaho Potato Commission Research Review. Production of virus-free potato lines in Idaho. March 2008.

Karasev, A.V., Strausbaugh, C. Idaho Sugar Beet Industry Research Review. Diagnosis, and management of curly top virus in sugar beet in Idaho. Feb. 2009.

Karasev, A.V., Idaho Grape Growers and Wine Producers Commission Research Review. Documentation of grapevine viruses for the sustainability of wine grape industry in Idaho. Feb. 2009.

Karasev, A.V., Nolte, P., Bolotova, Y.V., McIntosh, C.S., Whitworth, J., Boze, D., Idaho Potato Commission Research Review. Development, economic analysis, and validation of laboratory assays to identify potato viruses in dormant tubers. March 2009.

Karasev, A.V., Ewing, L., Idaho Potato Commission Research Review. Production of virus-free potato lines in Idaho. March 2009.

Karasev, A.V., Stewart-Williams, K. Idaho Bean Commission Research Review. Genetic diversity, diagnosis, and management of curly top virus in snap beans in Idaho. May 2009.

Karasev, A.V., Strausbaugh, C. Idaho Sugar Beet Industry Research Review. Diagnosis, and management of curly top virus in sugar beet in Idaho. Feb. 2010.

Karasev, A.V., Idaho Grape Growers and Wine Producers Commission Research Review. Documentation of grapevine viruses for the sustainability of wine grape industry in Idaho. Feb. 2010.

Karasev, A.V., Nolte, P., Boze, D., Idaho Potato Commission Research Review. Development of laboratory assays to identify potato viruses in dormant tubers. March 2010.

Karasev, A.V., Ewing, L., Idaho Potato Commission Research Review. Production of virus-free potato lines in Idaho. March 2010.

Karasev, A.V., Nolte, P., Olsen, N., Boze, D., Idaho Potato Commission Research Review. Survey of PVY strain types in Idaho potato. March 2010.

Karasev, A.V., Stewart-Williams, K. Idaho Bean Commission Research Review. Genetic diversity, diagnosis, and management of curly top virus in snap beans in Idaho. June 2010.

Karasev, A.V., Brown, C., Gray, S.M., USDA-CSREES-NRI Project Directors' Research Progress Review. Complete sequence and diversity of the PVY complex. Jan. 2009.

Karasev, A.V., Eigenbrode, S., USDA-CSREES-NRI Project Directors' Research Progress Review. Induction of Volatile Compounds from Virus-Infected Plants. May 2009.

Karasev, A.V., Brown, C., Gray, S.M., USDA-NIFA-NRI Project Directors' Research Progress Review. Complete sequence and diversity of the PVY complex. Jan. 2010.

Karasev, A.V. USDA-NIFA-AFRI Project Directors' Research Progress Review. Interplay between systemic movement and insect transmission in a phloem-limited plant virus. July. 2010.

**Grants and Contracts Awarded; total since 2006: \$6,563,396, sole spending authority, \$3,286,687**

Gray, S.M., Thannhauser, N., Karasev, A.V. "The orchestrated role of three multifunctional luteovirus proteins in virus movement with plant hosts and aphid vectors," Sponsored by USDA-NIFA-AFRI, Federal. \$500,000 (\$150,000 - spending authority) (March 15, 2012 - March 14, 2014).

Caldwell, D., Karasev, A.V., Meyers, J., "Development of virus-resistant yellow bean seed for domestic sale and export to Mexico," Sponsored by ISDA-SCBG, State. \$122,000 (\$64,920 - spending authority) (October 15, 2011 - October 14, 2013).

Karasev, A.V., Nolte, P., "Eradication of necrotic strains of *Potato virus Y* in Idaho." Sponsored by ISDA-SCBG, State. \$151,382 (October 15, 2011 - October 14, 2013).

Karasev, A. V., Dolja, V.V., "Cross-talk between aphid transmission, long-distance transport, and virion assembly in a closterovirus," Sponsored by USDA-NIFA-AFRI, Federal. \$399,000 (January 1, 2010 - December 31, 2012).

Gray, S.M., Karasev, A. V., Nolte, P., Alvarez, J.M., Hutchinson, P., MacIntosh, C., Whitworth, J., Charkowski, A., Groves, R., "Development of comprehensive strategies to manage *Potato virus Y* in potato and eradicate the tuber necrotic variants recently introduced into the United States," Sponsored by USDA-CSREES-SCRI, Federal. \$2,381,759 (\$323,139 – spending authority) (September 15, 2009 - September 14, 2014).

Karasev, A.V., Nolte, P., "*Potato virus Y* control in Idaho: incidence and distribution of *Potato virus Y* strains in Idaho seed potato," Sponsored by ISDA-SCBG, State. \$75,000 (September 15, 2009 - September 14, 2011).

Caldwell, D., Karasev, A.V., Meyers, J., "Development of virus-resistant yellow bean seed for domestic sale and export to Mexico," Sponsored by ISDA-SCBG, State. \$122,000 (\$64,920 - spending authority) (September 15, 2009 - September 14, 2011).

Karasev, A.V., Brown, C., Gray, S.M., "Complete sequence and diversity of the PVY complex," Sponsored by USDA-CSREES-NRI, Federal. \$465,000 (December 15, 2008 - December 14, 2012).

Eigenbrode, S., Bechinski, E., Karasev, A.V., Pappu, H., McPhee, K. "Reducing Risks Associated with Viruses Affecting Legumes in the Inland Pacific Northwest," Sponsored by USDA-CSREES-RAMP, Federal. \$1,250,000 (\$203,226 – spending authority) (August 15, 2008 – August 14, 2012).

Karasev, A.V., Eigenbrode, S., "Induction of Volatile Compounds from Virus-Infected Plants," Sponsored by USDA-CSREES-NRI, Federal. \$143,967 (December 1, 2007 - August 31, 2010).

Eigenbrode, S., Bosque-Perez, N., Karasev, A.V., "Vector responses to virus-induced changes in the host plant: implications for virus spread," Sponsored by USDA-NIFA-AFRI, Federal. \$349,950 (\$35,778 – spending authority) (September 1, 2009 - June 30, 2012).

Karasev, A.V., "Understanding why some isolates of *Potato virus Y* are necrotic in potato and tobacco," Sponsored by USDA-ARS, Federal. \$167,525 (September 1, 2008 - June 30, 2010).

Karasev, A.V., "Development and evaluation of improved diagnostic procedures for diverse strains of Potato virus Y," Sponsored by USDA-ARS, Federal. \$180,762 (September 1, 2007 - July 31, 2012).

Karasev, A.V., "Biological and genome analysis of Potato virus Y isolates affecting the U.S. potato crop," Sponsored by USDA-ARS, Federal. \$144,000 (October 1, 2006 - August 31, 2009).

Karasev, A.V., "Preliminary survey of potato and pepper isolates of PVY circulating in North-Central Mexico," Sponsored by U.S. Potato Board, Private. \$43,364 (January 1, 2009 - June 30, 2011).

Karasev, A.V., Rayapati, N., Simko, B. "Survey of grapevine viruses and virus vectors in Idaho," Sponsored by USDA-CSREES-NWCSFR, Federal. \$105,000 (October 1, 2010 - September 30, 2013).

Karasev, A.V., "Documentation of grapevine viruses for the sustainability of wine grape industry in Idaho," Sponsored by Idaho Grape Growers and Wine Producers Commission, State. \$7,500 (July 1, 2009 - June 30, 2012).

Karasev, A.V., "Genetic diversity, diagnosis, and management of curly top virus in snap beans in Idaho," Sponsored by Idaho Bean Commission, State. \$30,000 (July 1, 2007 - June 30, 2012).

Karasev, A.V., Strausbaugh, C. "Diagnosis, and management of curly top virus in sugar beet in Idaho," Sponsored by Idaho Sugar Beet Council, State. \$30,300 (April 1, 2009 - March 31, 2012).

Karasev, A.V., Nolte, P., Olsen, N., Boze, D., "Survey of PVY strain types in Idaho potato," Sponsored by Idaho Potato Commission, State. \$107,328 (July 1, 2010 - June 30, 2012).

Karasev, A.V., Nolte, P., Bolotova, Y.V., McIntosh, C.S., Whitworth, J., Boze, D., "Development, economic analysis, and validation of laboratory assays to identify potato viruses in dormant tubers," Sponsored by Idaho Potato Commission, State. \$151,990 (July 1, 2007 - June 30, 2011).

Karasev, A.V., Ewing, L., "Production of virus-free potato lines in Idaho," Sponsored by Idaho Potato Commission, State. \$63,710 (July 1, 2008 - June 30, 2012).

Gupta, S., Karasev, A.V., Olsen, N., "Evaluation of currently grown potatoes for storability and nutritional properties," Sponsored by Idaho Potato Commission, State. \$73,800 (\$6,000 – spending authority) (July 1, 2009 - June 30, 2011).

Karasev, A.V., Olsen, N., Nolte, P., Wharton, P., Thornton, M., "Utilizing pathogen detection test kits for rapid in-field use," Sponsored by Idaho Potato Commission, State. \$21,150 (\$3,500 – spending authority) (July 1, 2010 - June 30, 2011).

Nolte, P., Karasev, A.V., Boze, D., "Investigation of techniques to determine virus content of potato seed lots," Sponsored by Idaho Potato Commission, State. \$23,600 (\$11,500 – spending authority) (July 1, 2008 - June 30, 2010).

Karasev, A.V., Bosque-Perez, N., "Research on virus diseases of small grain crops in Idaho," Sponsored by Idaho Wheat Commission, State. \$19,712 (July 1, 2008 - June 30, 2010).

Zemetra, R., Karasev, A.V., Bosque-Perez, N., "Developing BYDV resistance using siRNA gene silencing," Sponsored by Idaho Wheat Commission, State. \$79,883 (\$61,706 – spending authority) (July 1, 2008 - June 30, 2010).

Eigenbrode, S., Karasev, A.V., "Monitoring and Forecasting Disease-Causing Viruses in Cool Season Food Legumes," Sponsored by USDA-CSREES-CSFL, Federal. \$86,510 (\$31,458 – spending authority) (July 1, 2007 - July 31, 2010).

Karasev, A.V., Windes, J.M., Guy, S., Brown, B.D., Morishita, D.W., "UI Small Grains Coordinated Research Project," Sponsored by USDA-BRD/CSREES, Federal. \$160,000 (\$20,500 – spending authority) (August 1, 2007 - September 30, 2008).

Karasev, A.V., "Diversity of Viruses in the Native Pacific Northwest Flora," Sponsored by NSF-EPSCoR, State. \$4,500 (May 14, 2007 - July 31, 2007).

Karasev, A.V., Nolte, P., Whitworth, J., "Development of a molecular assay to identify major potato viruses," Sponsored by Idaho Potato Commission, State. \$10,000 (July 1, 2006 - June 30, 2007).

Karasev, A.V., "Plant virus nanoparticles as a platform to present peptides," Sponsored by University Research Council, University of Idaho. \$10,000 (July 1, 2006 - June 30, 2007).

Karasev, A.V., "Plant Virus Nanoparticles – an Innovative Platform for Delivery of Anti-Toxins and Anti-Toxin Vaccines," Sponsored by Ben Franklin Partners Nanotechnology Institute, Private. \$30,000 (October 1, 2005 - December 31, 2005).

Karasev, A.V., "Immune Response to Oral HIV-1 Tat Expressed in Plants," Sponsored by NIH-NIAID, Federal. \$399,625 (September 15, 2002 - August 31, 2005).

## **SERVICE:**

### **Major Committee Assignments:**

#### **Regional:**

WERA-20 Diseases of grapevine, fruit trees, and small fruits, member, 2009-present. Organizer of the 2010 meeting in Boise, ID.

WERA-89 Diseases of potato, member, 2007-present, 2011 – secretary, 2012 – vice-chair

#### **State:**

Idaho Zebra Chip Management Advisory Committee, (November 2012 – Present).

Idaho *Potato virus Y* (PVY) Task Force, Member (July 2008 – Present).

Foundation Seed Stocks Committee, Member. (November 2007 - Present).

### **University and College of Agricultural and Life Sciences:**

Greenhouse Manager Search Committee (CALs), member 2012

Greenhouse Assistant Manager Search Committee (CALs), member 2012; hired Phil Anderson

University Biohazards Committee, Member. (June 2007 – June 2010).

College of Agricultural and Life Sciences, P&T Committee, Member. (May 2009 – October 2009).

### **Departmental:**

Third Year Faculty Review Committee for Joseph Kuhl, Member, 2012

Third Year Faculty Review Committee for Phillip Wharton, Member, 2011

Third Year Faculty Review Committee for Fangming Xiao, Chair, 2011

Mentoring committee for new PSES faculty, Dr. J. Kuhl, Member, appointed February 4, 2010

Search Committee for Plant Pathologist, Chair. (May-November, 2008); search frozen and then canceled due to budget crisis

Search Committee for Molecular Biologist, Member. (July 2007 – October 2008); hired Dr. J. Kuhl.

Promotion and Tenure Committee for Mark Schwartzlaender, Member, 2006

### **Judging:**

Judge, College of Science Student Research EXPO Competition (October 28, 2011).  
Judge, UI Graduate Student Research Competition (May 25, 2008).

### **Professional and Scholarly Organizations:**

Gamma Sigma Delta, the Honor Society of Agriculture, Vice-President (2011-2012)  
Gamma Sigma Delta, the Honor Society of Agriculture, member (2006-present)  
International Committee on Taxonomy of Viruses. Member (1993 - present)  
    Study Group on *Closteroviridae* (1993-present)  
    Study Group on Plant Picornaviruses (2002-present)  
American Society for Virology. member (1992 - present).  
American Phytopathological Society. member (1992 - present).  
    Vice-Chair, Virology Committee (2004-2005)  
    Chair, Virology Committee (2005-2006)  
    Immediate Past Chair, Virology Committee (2006-2007)  
    Editorial Board member and Associate Editor, *Phytopathology* (2005-2008)  
    Editorial Board member and Senior Editor, *Phytopathology* (2009-2011)  
Potato Association of America. (2006 - present).  
Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Scientific Advisory Panel, U.S. EPA.  
    (2005 - present).  
Viral Genomes Sequence Database Advisory Board, NCBI, NIH; member (2002 - present).  
Plant Virus Advisory Committee, American Type Culture Collection; member (1994 - present).

### **Review Activities:**

Senior Editor, "Plant Disease," American Phytopathological Society. (January 1, 2013 - December 31, 2015).  
Editor (Virology), *BSPP – New Disease Reports* (British Society for Plant Pathology) – Editorial Board Member (January 1, 2011 – present).  
Senior Editor, "Phytopathology," American Phytopathological Society. (January 1, 2009 - April 30, 2012).  
Associate Editor, "Phytopathology," American Phytopathological Society. (January 1, 2006 - December 31, 2008).  
Reviewer for *PNAS*, *Journal of Virology*, *Virology*, *Virus Research*, *Virus Genes*, *Journal of Virological Methods*, *Archives of Virology*, *Plant Physiology*, *Molecular Plant-Microbe Interactions*, *Phytopathology*, *Plant Disease*, *European Journal of Plant Pathology*, *Molecular Plant Pathology*, *HortScience*, *Journal of Phytopathology*, *American Journal of Potato Research*, *Plant Cell, Tissue & Organ Culture*, *FASEB Journal*

### **National service:**

Panelist, USDA-CSREES, Northwest Center for Small Fruit Research Review Panel, November, 2009  
Panelist, USDA-ARS Office of Scientific Quality Review Panel, December, 2006  
Reviewer for National Science Foundation, Plant Genome and Microbial Genome Sequencing Programs, 2006, 2007, 2009, 2011  
Reviewer for USDA-AFRI, Plant Biosecurity Program, 2009  
Reviewer for US-Israel BARD Program, 2008, 2009, 2011, 2012  
Reviewer for the Consortium for Plant Biotechnology Research Programs, 2007, 2008, 2011  
Reviewer for California Department of Food & Agriculture, Pierce's Disease Control Program, 2007

### **OTHER ACTIVITIES:**

#### **Scholarly Events Organized/Chaired**

Symposium "*Potato virus Y* – an Old Virus and a New Problem ", American Phytopathological Society, Providence, RI (August 4-8, 2012).

Symposium "Biology and Molecular Biology of Closteroviruses", American Phytopathological Society, Honolulu, HI (August 6-10, 2011).

Annual Meeting, Idaho Association of Plant Protection, Jerome, ID (November 8-9, 2010)

Annual Meeting, WERA-20 Fruit and Grape Research Meeting, Boise, ID (September 20-22, 2010)

Symposium "Evolutionary and functional genomics of virus-plant interactions ", American Phytopathological Society, Portland, OR (August 1-5, 2009).

Symposium "Closteroviridae", International Congress of Virology, Istanbul, Turkey, the International Union of Microbiological Societies (August 9-15, 2008).

Symposium " Plant virology: impact on science and society ", American Phytopathological Society, Minneapolis, MN (July 26, 2008 – July 30, 2008).

Symposium "Potato viruses and certification in the 21st century", American Phytopathological Society, San Diego, CA. (July 28, 2007 - August 1, 2007).

Symposium - "New regulatory challenges: rapid changes in taxonomy of plant pathogens", American Phytopathological Society, Quebec City, Canada. (July 28, 2006 - August 2, 2006).

### **Scholarly Presentations**

Karasev, A.V., Hu, X., Brown, C.J., Kerlan, C., Nikolaeva, O.V., Crosslin, J.M., and Gray, S.M. (2011) Genetic diversity of *Potato virus Y<sup>O</sup>* and origin of recombinant PVY strains. - selected oral presentation; selected by the Annual Meeting of the American Phytopathological Society, August 6-11, 2011; Honolulu, HI.

Karasev, A.V., Blades, B.S., and Poplawsky, A.R. (2011) Aphid transmission of *Beet yellows virus* in a model system. - invited oral presentation; invited by the Annual Meeting of the American Phytopathological Society, August 6-11, 2011; Honolulu, HI.

Eid, S., Durrin, J.S., Nikolaeva, O.V., and Karasev, A.V. (2011) A non-structural, p17 protein of *Potato leafroll virus* co-localizes in plant phloem tissue with virus capsid protein. - selected poster presentation; selected by the Annual Meeting of the American Phytopathological Society, August 6-11, 2011; Honolulu, HI.

Galvino-Costa, S.B.F., Figueira, A.R., Hu, X., Kerlan, C., and Karasev, A.V. (2011) A novel type of *Potato virus Y* recombinant genome. - selected oral presentation; selected by the Annual Meeting of the American Phytopathological Society, August 6-11, 2011; Honolulu, HI.

Galvino-Costa, S.B.F., Figueira, A.R., Nikolaeva, O.V., and Karasev, A.V. (2011) An unusual serological reactivity revealed in isolates of *Potato virus Y* from Brazil. - selected poster presentation; selected by the Annual Meeting of the American Phytopathological Society, August 6-11, 2011; Honolulu, HI.

Galvino-Costa, S.B.F., Figueira, A.R., Camargos, V.V., Geraldino, P.S., Nikolaeva, O.V., and Karasev, A.V. (2011) Molecular typing of *Potato virus Y* isolates from Brazil reveals a history of introduction of necrotic strains. - selected oral presentation; selected by the Annual Meeting of the American Phytopathological Society, August 6-11, 2011; Honolulu, HI.



- Robles-Hernández, L., González-Franco A.C., Hernández-Huerta, J., Meacham T.M., and Karasev, A.V. (2011) Survey of *Potato virus Y* isolates in potato in Chihuahua, Mexico. - selected oral presentation; selected by the Annual Meeting of the American Phytopathological Society, August 6-11, 2011; Honolulu, HI.
- Robles-Hernandez, L., González-Franco A.C., Gill-Langarica, E.M., Nikolaeva, O.V., and Karasev, A.V. (2011) Identification of curly top virus infection in Jalapeño pepper in Chihuahua, Mexico. - selected oral presentation; selected by the Annual Meeting of the American Phytopathological Society, August 6-11, 2011; Honolulu, HI.
- Woodell, L.K., Karasev, A.V., and Olsen, N. (2011) Utilizing pathogen detection test kits for rapid in-field *Potato virus Y* diagnosis. - selected oral presentation; selected by the 95th Annual Meeting of the Potato Association of America, August 14-18, 2011; Wilmington, NC.
- Karasev, A.V. (2010) Genetic diversity of *Potato virus Y*: a new challenge for plant quarantine services. - invited oral presentation; invited by the 43rd Brazilian Congress of Phytopathology, August 15-19, 2010, Cuiabá –MT, Brazil.
- Kerlan, C., Marhadour, S., and Karasev, A.V. (2010) A novel source of hypersensitive resistance against the PVY<sup>N</sup> strain of *Potato virus Y* (PVY) in an unidentified potato cultivar. - selected oral presentation; selected by the 94th Annual Meeting of the Potato Association of America, August 15-19, 2010; Corvallis, OR.
- Kerlan, C., Nikolaeva, O.V., Hu, X., Meacham, T., Gray, S.M., and Karasev, A.V. (2010) Identification of the molecular make-up of the *Potato virus Y* strain PVY<sup>Z</sup>. - selected oral presentation; selected by the Annual Meeting of the American Phytopathological Society, August 7-11, 2010; Charlotte, NC.
- Durrin, J.S., Ju, H.J., Nikolaeva, O.V., Gray, S.M., and Karasev, A.V. (2010) Investigation of a possible role of a non-structural p17 protein of *Potato leafroll virus* in aphid transmission. - selected oral presentation; selected by the 2010 Annual Meeting of the American Society for Virology, July 17-21, 2010; Bozeman, MT, W11-10.
- Karasev, A.V., González-Franco A.C., Robles-Hernández, L., Hernández-Huerta, J., and Meacham T.M. (2010) Identificación de una cepa rara de PVY en papa del estado de Chihuahua, México. - selected oral presentation; selected by the XII Congreso/XXXVI Nacional de la Sociedad Mexicana de Fitopatología, July 4-8, 2010; Merida, Mexico.
- Karasev, A. V., "Identification of an Unusual Recombinant *Potato Virus Y* Strain in Potato in North-central Mexico". Western Regional Meeting of the American Society of Plant Biologists; Pullman, WA – selected oral presentation; selected by the American Society for Plant Biologists (May 2, 2010),
- Karasev, A.V., "Identification of the molecular make-up of *Potato virus Y* strain PVY<sup>Z</sup>", WERA-89 Potato Research Meeting, Tucson, AZ – invited oral presentation; invited by WERA-89 (March 11, 2010).
- Karasev, A.V., "PVY: 2009 Season & Strain Differences", WERA-89 Potato Research Meeting, Tucson, AZ – invited oral presentation; invited by WERA-89 (March 11, 2010).
- Karasev, A.V., "PVY: 2009 Season & Strain Differences", Idaho Potato Conference, Pocatello, ID – invited speaker; invited by the Idaho Potato Conference Organizing Committee (January 21, 2010).
- Karasev, A.V., "2009 Season and PVY Strain Differences", Idaho Potato Seed Seminar, Pocatello, ID – invited speaker; invited by the Idaho Crop Improvement Association (January 20, 2010).

- Karasev, A.V., “Ordinary and necrotic strains of PVY in Idaho”, Idaho Association of Plant Protection, Jerome, ID (November 9, 2009).
- Karasev, A.V., “Quantitating Beet Curly Top Virus in Sugar Beet by ELISA”, Idaho Association of Plant Protection, Jerome, ID (November 10, 2009).
- Karasev, A. V., 93rd Meeting of Potato Association of America, "Sequencing the North American collection of *Potato virus Y* isolates," Potato Association of America, Fredericton, New Brunswick, Canada – invited oral presentation; invited by the Potato Association of America. (August 11, 2009).
- Karasev, A.V., “*Nicotiana benthamiana* as a model plant to study aphid transmission of plant viruses”, APS Annual Meeting, Portland, OR – selected oral presentation; selected by the American Phytopathological Society (August 4, 2009).
- Karasev, A.V., “Evolutionary genomics of virus-plant interactions”, APS Annual Meeting Symposium, Portland, OR – Invited speaker/organizer; invited by the American Phytopathological Society (Virology Committee) (August 3, 2009).
- Karasev, A.V., “A non-structural p17 protein of *Potato leafroll virus* is involved in aphid transmission”. Annual Meeting of the American Society for Virology, Vancouver, BC - selected oral presentation; selected by the American Society for Virology (July 13, 2009).
- Karasev, A.V., “A novel recombinant strain of *Potato virus Y* suggests a new viral genetic determinant of vein necrosis in tobacco”. Annual Meeting of the American Society for Virology, Vancouver, BC – selected oral presentation; selected by the American Society for Virology (July 12, 2009).
- Karasev, A.V., “Grapevine viruses in Idaho”, WERA-20 Grape and Fruit Tree Research Meeting, Kalamazoo, MI – invited oral presentation; invited by WERA-20 (June 14, 2009).
- Karasev, A.V., “A novel NTN strain of PVY and genetic determinants for tobacco vein necrosis”, 2<sup>nd</sup> International *Potato virus Y* meeting, Paris, France – invited speaker; invited by the PVY Worldwide Organization and Institut National de la Recherche Agronomique (INRA), France (June 9, 2009).
- Karasev, A.V., “Export Shipments to Mexico: Misidentification of Necrotic PVY Strains”, WERA-89 Potato Research Meeting, Tucson, AZ – invited oral presentation; invited by WERA-89 (March 11, 2009).
- Karasev, A.V., “Export Shipments to Mexico: Getting PVY Out of the Way”, Idaho Potato Conference, Pocatello, ID – invited speaker; invited by the Idaho Potato Conference Organizing Committee (January 21, 2009).
- Karasev, A.V., “Innovative Practices in Laboratory Testing for Seed Certification”, Potato EXPO 2009, San Antonio, TX – invited speaker; invited by the National Potato Council (January 9, 2009).
- Karasev, A.V., “An update on potato viruses in Idaho, 2008 season”, Idaho Association of Plant Protection, Jerome, ID (November 5, 2008).
- Karasev, A.V., “Studies on beet curly top virus in Idaho: detection and diversity”, Idaho Association of Plant Protection, Jerome, ID (November 5, 2008).
- Karasev, A.V., “Two Closteroviruses Are Associated with the Carnation Necrotic Fleck Disease Complex”, International Congress of Virology, Istanbul, Turkey – symposium chair/invited State-of-the-Art speaker; invited by the International Union of Microbiological Societies (August 11, 2008).

- Karasev, A.V., "Plant virology: impact on science and society", APS Annual Meeting Symposium, Minneapolis, MN – Invited speaker/organizer; invited by the American Phytopathological Society (Virology Committee) (July 30, 2008).
- Karasev, A.V., "New *Potato virus Y* strains in Idaho", International *Potato virus Y* meeting, Paris, France – invited speaker; invited by the PVY World-wide Organization and Institut National de la Recherche Agronomique (INRA), France (June 12, 2008).
- Karasev, A.V., "New Potato virus Y strains in Idaho", WERA-89 Potato Research Meeting, San Antonio, TX – invited oral presentation (March 12, 2008).
- Karasev, A.V., "Methods to detect and differentiate potato viruses in Idaho", Idaho Potato Seed Seminar, Pocatello, ID – invited speaker; invited by the Idaho Crop Improvement Association (January 22, 2008).
- Karasev, A.V., "*Potato virus Y*: New Idaho strains and new challenges", Idaho Potato Conference, Pocatello, ID – invited speaker; invited by the Idaho Potato Conference Organizing Committee (January 23, 2008).
- Karasev, A.V., "New *Potato virus Y* strains in Idaho", Idaho Association of Plant Protection, Jerome, ID (November 7, 2007).
- Karasev, A. V., Ewing, L., Meacham, T., Laug, S., Boze, D., 91st Meeting of Potato Association of America, "RT-PCR-based testing in production of virus-free potato lines in Idaho," Potato Association of America, Idaho Falls, ID. (August 13, 2007).
- Karasev, A. V., 2007 Annual APS Meeting, "Plant viral-based vectors for production of biomedical," American Phytopathological Society, San Diego, CA. (August 1, 2007).
- Karasev, A. V., 2007 Annual APS Meeting, "Potato viruses and potato certification in the 21st century," American Phytopathological Society, San Diego, CA. (July 31, 2007).
- Langham, M., Tolin, S., Sutula, C., Schwartz, H., Wisler, G., Karasev, A. V., Hershman, D., Gisler, L., Golod, J., Ratcliffe, S., Cardwell, K., 2007 Annual APS Meeting, "Legume PIPE—A New Tool For Disease Management In Legumes," American Phytopathological Society, San Diego, CA. (July 29, 2007).
- Karasev, A.V., Idaho Crop Improvement Association Fall Combined Area Meeting, "Laboratory Assays to Identify Potato Viruses in Dormant Tubers," Idaho Crop Improvement Association, Idaho Falls, ID. (October 26, 2006).
- Karasev, A.V., DEPSCoR Annual Competition, "Plant Virus Nanoparticles - a Platform to Deliver Anti-Toxins and Anti-Toxin Vaccines," UI Office of Research, Moscow, ID. (August 22, 2006).
- Karasev, A.V., APS Annual Meeting, "New regulatory challenges: rapid changes in taxonomy of plant pathogens," American Phytopathological Society, Quebec City, Canada. (July 31, 2006).

#### **Guest Lecturing in Educational Programs On or Off Campus**

- Genetic diversity of *Potato virus Y*: a new challenge for plant quarantine services, 43<sup>rd</sup> Brazilian Congress of Phytopathology, Cuiabá –MT, Brazil. (August 16, 2010).
- Biotechnology and Genetic Engineering in Plants, Department of PSES, University of Idaho, Moscow, ID, US. (February 18, 2010)

*Potato virus Y*: an old virus and a new problem, Department of Plant Pathology, University of California, Davis, CA, US. (January 25, 2010)

Sequencing the North American collection of *Potato virus Y* isolates, Universidad Autonoma de Chihuahua, Chihuahua, Mexico. (August 17, 2009).

*Potato virus Y*: Diversity and New Necrotic Strains, Department of PSES, University of Idaho, Moscow, ID, US. (April 23, 2009).

Update on PVY virus in potatoes. Western Laboratories Symposium, Pocatello, ID (January 22, 2009).

*Potato virus Y*: Diversity and New Necrotic Strains, Department of Plant Pathology, Washington State University, Pullman, WA, US. (December 8, 2008).

*Potato virus Y*: Diversity in Idaho and new necrotic strains, Institut National de la Recherche Agronomique (INRA), Rennes, France. (June 16, 2008).

Plant virus research in Idaho, Department of Plant Pathology, University of Florida, Lake Alfred, FL, US. (May 5, 2008).

Select topics in plant virology, a series of 5 lectures. National Center for Biotechnology of Kazakhstan, Astana, Kazakhstan. (September 24-28, 2007).

Plant virus vectors: turning enemies into allies, Department of MMBB, University of Idaho, Moscow, ID, US. (September 14, 2006).

#### **Other Extramural Service Activities**

2013-2015 Senior editor – Plant Disease, An International Journal. American Society for Phytopathology Press, St. Paul, MN (3-year term).

2011-present Editor (Virology) – BSPP – New Disease Reports. British Society for Plant Pathology.

2010 Guest editor – Citrus Tristeza Virus and Tristeza Diseases. American Society for Phytopathology Press, St. Paul, MN (15 chapters).

2009-2011 Senior editor – Phytopathology, An International Journal. American Society for Phytopathology Press, St. Paul, MN (3-year term).

2009 Guest editor - Immunological Potential of Plant-Based Microbial Vaccines. In: *Current Topics in Microbiology and Immunology, Vol. 332*; Springer-Verlag, Heidelberg/New York (6 chapters).

2006-2008 Associate editor – Phytopathology, An International Journal. American Society for Phytopathology Press, St. Paul, MN (3-year term).

2004 Guest editor – *Vaccine*, Vol. **23** (issue 15) (Symposium - Plant Derived Vaccines and Antibodies: Potential and Limitations)

#### **Honors and Awards**

2012 University of Idaho Merit Award

*American Journal of Potato Research*, Outstanding Paper Award – granted by the Potato Association of America in 2011. – Karasev et al. (2010).

2008 Award for Excellence – Member of the Technical Committee for WERA-089 “Potato Virus Disease Control”, in recognition of outstanding contributions to Western Region Multistate Research. Received March 11, 2009.

U of I, University Research Office, Travel Award, 2006

Delaware Valley College, Doylestown, PA, Student Recognition Award, 2003

Japan Science and Technology Agency, Office of the Prime Minister, a short-term (4 weeks) fellowship, 1998

Travel awards of the National Center for Biotechnology Information, Scientific Visitors Program, National Library of Medicine, National Institutes of Health, 1993 and 1997