



# NEWSLETTER

## Oklahoma Section American Chemical Society

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Volume 12 Number 3

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### The Chemistry of Life – The Answer Is In Your DNA

Tuesday – May 16, 2006  
Heritage Center – Room 326  
Nigh University Center  
University of Central Oklahoma  
Edmond OK

*Dr. Brandt G. Cassidy*

Director of Operatons  
DNA Solutions, Inc.  
840 Research Parkway – Suite 551  
Oklahoma City OK 73104  
405.271.6033

**L**ook at anyone around you and you might think about how different you are than they. You might be taller, thinner, have lighter skin, blond hair, capable of running a marathon or doing calculus in your head. Wow! You are different! Or are you? The fact is that your DNA is 99.9% identical to everyone else on Earth. In this presentation I will only mention the similarity and spend the time focusing on the 0.9% of your DNA that is different. Obviously it is these differences that make us unique [except for identical twins ]I will discuss how these differences are used to evaluate your ancient ancestry, possible links to specific regions of the world and finally your immediate family lineage. The analysis of your unique DNA also allows criminologists to determine if you were involved in a crime and left evidence behind. You would be amazed at where your DNA could be found during an investigation. I will cover how this is done in the laboratory. Your DNA contains much more information than just who you are. Scientists are now discovering clues in your DNA regarding your predisposition to cancers and other medical conditions. Within the 3 billion DNA building blocks that make up your genetic code, there lies a wealth of information [much of which remains to be discovered].

[Reservation Information on Page 2] 

**Schedule:**

6:00 PM Social Hour: Howell Hall Attrium

7:00 PM Dinner: Heritage Room # 326  
Nigh University Center

8:00 PM Speaker: Dr. Brandt G. Cassidy

Menu: Chicken Modoga [boneless breast of chicken with creamy wine sauce, bacon and fresh mushrooms],  
rice pilaf and brocolli, Caesar salad, rolls, pie, coffee or iced tea.

Cost: \$15.00-ACS Member; \$10.00-ACS Student Affiliate.

**Reservation Deadline:** Friday, 12 May, 2006 by noon. Barbara Brown: 405.974.5018  
[bbrown41@ucok.edu](mailto:bbrown41@ucok.edu)

**Dr. Brandt G. Cassidy, Ph.D.**

**Current Position:**

Director of Operations, DNA Solutions, Oklahoma City, Oklahoma, 1999-present

**Education:**

Iowa State University, Ames, Iowa - B.S. - Biology, 1980

Baylor College of Medicine, Houston, Texas - Ph.D. - Pharmacology, 1987

**Professional Experience:**

Research Tech - Department of Pharmacology, Baylor College of Medicine, Houston, TX, 1980-1982

Postdoctoral Fellow - Department of Agronomy & Range Science, UC, Davis, California, 1987-1989

Postdoctoral Fellow - Noble Foundation, Inc., Ardmore, Oklahoma, Plant Biology Division, 1989-1992

Assistant Staff Scientist, Plant Biology Division, Noble Foundation, Inc. Ardmore, Oklahoma, 1992-1997

Adjunct Assistant Professor - Department of Plant Pathology, OSU, Stillwater, Oklahoma, 1995-1998

President, CEO, Chief Science Officer of Ardmore Biological Analysis, Inc., 1998-1999

Director of Operations, DNA Solutions, Oklahoma City, Oklahoma, 1999-present

**Professional Organizations Memberships:**

American Association for the Advancement of Science	1983-
Human Identification Trade Association	1997-2000
International Society for Animal Genetics	1998-
Southwestern Working Group on DNA Analysis Methods	1998-2000
Association of Forensic DNA Analysts and Administrators	2000-
The Wildlife Society	2005-

**Courses Attended:**

"Presenting DNA Statistics in Court" September 15-16 1997

Eight International Symposium on Human Identification Scottsdale, AZ; September 17-20, 1997

FBI sponsored training on "DNA Analysis and Interpretation" Austin, TX; May 27-29, 1998

STR Educational Forum, Austin, TX; January 16-17 2001

Parentage Minisymposium, Phoenix, AZ October 7 2002

13th International Symposium on Human Identification Phoenix, AZ; October 8-10, 2002

Parentage Minisymposium, Phoenix, AZ Sept 29 2003  
14th International Symposium on Human Identification, Phoenix, AZ; Sept 28-Oct 2, 2003  
15th International Symposium on Human Identification, Phoenix, AZ; Oct 4-7, 2004  
Parentage and Mixture Statistics Workshop, Phoenix, AZ, October 3, 2004  
Y-STRs: Practical Considerations and Interpretation Issues Workshop, Phoenix, AZ, October 7, 2004

Research Activities/Award:

National Research Service Award (T32) Trainee, 1983-1987  
Graduate Student Council Chairperson 1984-1985  
Harris Busch Outstanding Graduate Student Award 1986  
Organizer of Noble Foundation Fourth Annual Virology Mini-Retreat [Jan. 13-15] 1995

Journal Reviews:

Reviewed papers submitted for publication in *Transgenic Research*, *Phytopathology*, *Plant Cell Reports* and *Plant Molecular Biology*. Reviewed grant for Binational Agricultural Research and Development Fund [BARD].

Teaching:

Oklahoma State University guest lecturer in graduate Plant Pathology 5013 - Plant Virology on “Potyviral Replication, Gene Expression and Assembly”, April, 1994.

Training course: “The Identification and Detection of Viruses of Legumes with Special Emphasis on Groundnut” organized and wrote workbook section on PCR detection of Groundnut viruses - taught Asian participants PCR techniques, Khon Kaen University, Thailand, March 1995.

Training course: “ The Detection and Identification of Groundnut Viruses in Africa” Lectured and taught molecular methods of peanut virus detection to African participants. Demonstrated nonradioactive methods for nucleic acid detection of peanut viruses. Plant Protection Institute, Pretoria, South Africa, March 1996.

Oklahoma State University lecturer in graduate Plant Pathology 5013 - Plant Virology on “Pathogen-derived resistance: Mechanism of co-suppression and gene silencing” April, 1996.

Invited Talks:

Dr. Cassidy has presented over 16 talks in the USA as well as India, Thailand, South Africa and Egypt.

Publication references upon request:

26 refereed Journal articles, 5 book chapters, 41 published abstracts

## UCO Traveller’s Information.

UCO is located north of 2nd Street in Edmond.

From I-35, exit W on 2nd Street and travel to University. Turn N on University and E on Main Street [first right]. You can park in Faculty/Staff Lot 8. The Howell Hall Atrium is on the ground floor between Howell Hall and the Laboratory Annex. Enter by going down the stairs on the west side of the buildings or from inside either building.

From Broadway Extension [I-235], go N to 2nd E until you reach University. Follow the directions above.

An interactive campus map can be found at:

<http://administration.ucok.edu/admin/map/map.htm>

## Councilor's Report.

The 231st ACS National Meeting was held in Atlanta, GA, on March 26-30, 2006. The Georgia World Conference Center offered a spacious environment. Attendance was up with a total of 12,546 registered attendees of which 4,155 were students. More than 1,100 undergraduate posters were presented.

The Council meeting held on Wednesday, March 29, 2006, was led by the state's own Ann Nalley of Cameron University [current President]. The Council selected Bruce E. Bursten and Bassam Z. Shakhashiri as candidates for the 2007 President-elect.

District Board of Director candidates will include Thomas R. Gilbert and Anne T. O'Brien for District I and John E. Adams and Judith L. Benham for District V. Internet Voting was used for the first time in the 2005 national election with a 14% increase in voting members over 2004. Guidelines allowing Local sections to utilize Internet voting will be available shortly.

The Budget and Finance report showed the ACS is very healthy financially with an unexpected net profit of \$11.6 million from operations. This was attributed to greater than projected journal sales.

Dues will increase 3.95% in 2007 to \$132.00. This was a topic of much discussion in light of the windfall realized in 2005, but the recommendation passed. Overall the debate on the floor was minimal compared to most years.

Tim Smith  
Alternate Councilor

## La Niña's Return May Spell Doom For Drought Relief

The drought began in the fall and lasted through the following spring, decimating the state's winter wheat crop. The loss of forage for cattle necessitated mass sell-offs which depressed prices. Losses to the agricultural industry alone were well over \$1B. Farm bankruptcies soared, Wildfires ran rampant, burning more than 633,000 acres – nearly 1,000 square miles – prompting a FEMA disaster declaration. Hopes were dashed as the spring rains stayed away. Instead, the state was met with blowing dust and summer-like heat. Some meteorologists blamed the intensity of the drought that year on La Niña, the periodic cooling of the equatorial Pacific waters. The year was 1996, and the similarities to 2006 are frightening.

Previous data have shown a tendency for warmer and drier conditions in Oklahoma during La Niña events, and experts at the Climate Prediction Center [CPC] are once again predicting a visit by El Niño's famous sister, La Niña:

*“However, current conditions [stronger than average easterly winds over the central equatorial Pacific] and recent cooling trends in observed oceanic conditions support continuation of La Niña conditions in the tropical Pacific during the next 3-6 months.”*

It is important to note that while the La Niña of 1995-96 was considered very strong, the forecast for the 2006 La Niña is relatively much weaker. Given the existing drought conditions the state currently faces, however, any tendency towards drier weather is significant.

### 2006 vs. 1996

The 1996 La Niña event occurred in the midst of an existing drought, just as the current La Niña event. Statistically, Oklahoma is entering this spring season in worse condition than during the 1996 drought. From October 1995 through January 1996, the statewide-averaged precipitation total was 4.38”, more than 5” below normal and the 10<sup>th</sup> driest October-January on record. For the same period in 2005-06, the statewide averaged precipitation was only 3.31”, the 5<sup>th</sup> driest on record at more than 6” below normal. Oklahoma's wheat belt, where the majority of the winter wheat crop is grown, runs from southwestern through north central Oklahoma. Within that belt, the rainfall statistics are very similar during the two time periods with deficits of nearly 5”.

There was some relief for the southeast corner of the state during the 1996 event. That is encouraging news, since that area is currently in the throes of what the National Drought Mitigation Center terms an “exceptional drought”, the worst designation they prescribe. The latest Seasonal Drought Outlook released by the CPC predicts

some improvement for southeastern Oklahoma, but also notes that “with 12-month rainfall deficits exceeding 20” in the northeast Texas-southeastern Oklahoma region, drought-ending rains are unlikely anytime soon.”

The drought outlook predicts persistence or intensification of the dry weather in most of the state, with drought development likely to persist or intensify in the wheat belt region, enhancing the risk for economic damages to Oklahoma’s agricultural industry.

#### La Niña

The weather patterns associated with La Niña favor warm and dry weather for Oklahoma due to a northern, shift in the jet stream, which helps to create a large blocking ridge of high pressure in the desert southwest. This diverts storm systems from the Pacific farther to the north, increasing rainfall in the Pacific-Northwest and decreasing rainfall in the southwestern U.S. The sinking air and lack of precipitation can contribute to above-normal temperatures for Oklahoma. However, it must be noted that the effects of La Niña are described in broad-based weather patterns. So while dry and warm conditions might generally affect the southwestern half of the U.S., local impacts might be quite-different than the large-scale patterns.

To check on the U.S. Seasonal Drought Outlook, go to the National Weather Service Climate Prediction Center: [http://www.cpc.noaa.gov/products/expert\\_assessment/seasonal\\_drought.html](http://www.cpc.noaa.gov/products/expert_assessment/seasonal_drought.html)

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Gary McManus-Climatologist  
Oklahoma Climatological Survey  
Oklahoma Water News  
January – February 2006

## Oklahoma Section 2006 Meeting Schedule

- September:      OBU at Shawnee [Annual Family Meeting]  
                         Speaker: Probably Sherry Marshall from The Omniplex  
                         Date: TBA
- October:            Date: TBA  
                         Speaker: TBA  
                         Location: TBA
- November:         Date: TBA [Usually Honor Section 50 Year Members]  
                         Speaker: Chemist of the Year-Neil Purdie  
                         Location: OSU

**May 2006 Section Meeting**

**Tuesday 16 May, 2006**

**University of Central Oklahoma/Edmond  
Heritage Room # 326  
Nigh University Center**

**Speaker: Dr. Brandt G. Cassidy**

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