Clock-like the excitement of fall semester is palpable. Despite the disappointment of the Boise State loss, hope and promise for football rebuild as the team prepares for Miami. Change is also rumbling through our department and college. The retirements of Drs. Barnes, Cassell, Gwazdauskas, and McGilliard this summer especially on top of prior retirements of Drs. Herbein and Pearson are major events in the life of the department. This is a time of reflection, strategic planning and facing realities as well as a time of great promise and confidence in the future.

As you will see in this newsletter, the successes of our faculty, staff and students continue to be outstanding. To build on these strengths we have presented Dean Alan Grant with a white paper which outlines our approach to identify and hire Dairy Science faculty who will make our department and the college even stronger. Our proposed targeted hires, along with judicious use of resources will strengthen our core missions of teaching and mentoring students as we lead teaching, extension and research projects that contribute to healthy food, healthy water and healthy people as well as a vital and prosperous Virginia dairy industry.

I continue to marvel at the concern and resilience of my faculty colleagues, the spark of our graduate students, the seemingly limitless energy of our undergraduate students and the dedication and consistent hard work of our department and dairy center staff.

I remain optimistic and excited about the future of our department. We hope you all find this update informative and interesting. Let us hear from you.

Mike
R. Michael Akers, Ph.D.
Horace E. and Elizabeth F. Alphin
Professor & Department Head

Dairy relocation & facilities
I have told many if nothing else the dairy relocation efforts have taught me patience. It’s a virtue after all. After some re-evaluation and education of newly arrived administrators regarding nutrient management and animal needs the planning process appears back on track. Certainly this is a complex and multi-faceted endeavor so careful planning now should pay future dividends.

As an example, a representative group of teaching focused faculty from Dairy Science, Animal and Poultry Sciences, Ag Technology, and Veterinary Medicine have determined the attributes of teaching/extension facilities that are needed to deliver the first-class courses and programs that our varied animal agriculture students and stakeholders need and deserve. This vision is now in the hands of the engineering and architecture firm. For more information about the dairy center relocation and other future relocation plans, visit the college’s website at www.cals.vt.edu/about/reloc_dairygen.html
Scholarship and Research

Scholarship is a key to department success. I am happy to report that we continue to do well. Changes in faculty numbers will impact totals but multiple new contracts and grants have been secured this year. For 2009, DASC faculty members, graduate students and colleagues published 31 scientific journal articles with 16 journal articles in press or book chapters. In addition, there were 15 refereed conference presentations, 36 scientific abstracts published and 93 popular press articles written. Department faculty and colleagues had 43 multi-year active projects valued at $7.7M with 18 ($2.5M) new projects. You can find a link to a listing of departmental publications and active research projects on our department home page.

Faculty members also continue to make multiple invited scientific presentations literally around the world. Clearly, the hard work and dedication of faculty and staff continues to pay dividends in reputation, scholarship, and funding success.

Awards and Accolades

Faculty
• **Drs. Barnes, Cassell, and McGilliard** were honored with the title “Professor Emeritus” by the Board of Visitors.
• **Dr. Bennet Cassell** received 2010 NAAB Research Award, presented at their annual meeting in Milwaukee, WI.
• **Dr. Cassell** was also recognized by DHIA for his service in promotion and use of dairy records and genetic selection tools.
• **Dr. Frank Gwazdauskas** received the 2010 CALS Teaching Excellence Award.
• **Dr. Frank Gwazdauskas** was honored with the title “David and Margaret Lincicome Professor of Dairy Science Emeritus” by the BOV.
• **Dr. Katharine Knowlton** was promoted to Full Professor
• **Dr. Ron Pearson** Professor Emeritus of Dairy Science was named a 2010 Fellow of the American Dairy Science Association.

Staff
• **Ms. Cindy Schlossnagle**, our departmental fiscal coordinator was selected as outstanding CALS employee for April 2010.

Graduate Students
• **Dr. Mini Bharathan**, who completed her degree with Dr. Isis Mullarky, received the 2010 Sigma Xi Outstanding Ph.D. Research Award. Her research is on a novel dendritic cell based vaccine for Staphylococcus aureus.
• **Jennifer Stamey** a Ph.D. candidate with Dr. Corl took first place in the poster competition for the College of Agriculture and Life Sciences at the 2010 Graduate Student Assembly Research Symposium with her poster titled, “Use of omega-3 fatty acid rich algae and their oil as a feed supplement for dairy cattle.”
• **Allison Smith**, who recently finished her MS degree with Dr. Mullarky, placed second in the immunology poster competition at the 90th Annual Conference of Research Workers in Animal Disease held in Chicago, IL. Her poster was titled, “A porcine model of polymicrobial respiratory infections with swine influenza and Staphylococcus aureus.”
**People and Places**

Dr. Sumanta Nandi, Bangalore, India, was a visiting scientist working in the laboratory of Dr. Gwazdauskas. He conducted research on transgenic animal production and cloning.

In early April, Dr. Stallings, professor and dairy extension specialist and Shane Brannock, director of the VT Dairy Science Complex participated in an extension program in Morocco, North Africa. The program was sponsored by the U. S. Soybean Export Council and presented to leaders in the Moroccan feed industry. Dr. Stallings presented on recent developments in dairy cattle feeding and Mr. Brannock offered a practical presentation on the importance of using high quality feeds in the development of dairy calves from birth to first lactation.

Location: Casablanca, Rabat and Larache in The Kingdom of Morocco, North Africa.

Adam Storm, a PhD candidate from the Univ. of Aarhus in Denmark, worked with Dr. Hanigan from February through April on modeling the effects of blood flow on volatile fatty acid and urea transport across the ruminal wall.

Dr. Ken Leslie, from the Ontario Veterinary College, in Guelph, Ontario, visited twice in the last year. He spent time at Virginia Tech studying animal behavior during Escherichia coli mastitis.

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**Miscellaneous Items**

Dr. Ben Corl and wife Julie welcomed a new addition to their family in October – Helen Lucille Corl [21" and 8 lb 8.5 oz].

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**Big Shoes to Fill**

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**Immunology and Mastitis Lab**
Dairy Science Department News: 2010

Dairy Cattle Judging Teams have Another Successful Year

Eastern States and Rachel was High Individual in Oral Reasons at Harrisburg. The team was coached by Drs. Michael Barnes and Katharine Knowlton.

Team 2 recently finished the season at the North American Contest in Louisville, KY. Team 2 members include Sarah Burczynski, Horseheads, NY, Erin Henley, Manakin-Sabot, VA Chris Potts, Purcellville, VA, and Lauryn Singer, Parkville, MD. The team placed 2nd overall in oral reasons at Louisville, and 8th overall in the contest. Chris and Sarah also placed 2nd and 9th, respectively, in oral reasons. Earlier in the year Team 2 placed in the top five in four breeds at the Eastern States contest, and placed 5th overall and in oral reasons.

Dairy Challenge Team Golden

The VA Tech Dairy Challenge team earned a gold placing in the ninth annual North American Intercollegiate Dairy Challenge (NAIDC), held April 9-10, in Visalia, CA. Teams were from 30 universities from the US and Canada. Virginia Tech was represented by Dairy Science seniors Dustin Phipps (Mouth of Wilson), Curtis Rhoderick (Mt. Airy, MD), Dare Shepherd (Blackstone, VA) and Alex Steer (Cottage Grove, TN). Coaches: Drs. Mike McGilliard and Mark Hanigan.

Team findings were presented orally to the herd owners and a panel of five industry experts. Awards were given in three categories, platinum (first and second), gold (several) and silver (several). For more information, see: www.dairychallenge.org

8th Annual Hokie Cow Classic Fundraiser another HUGE SUCCESS

The Annual Hokie Cow Classic Golf Tournament was held in May. It supports travel costs of the Virginia 4H Teams, Virginia Tech Dairy Challenge and Judging Teams, and additional scholarship and student recruiting efforts. 25 teams participated at the beautiful Blacksburg Country Club. Participants greatly enjoyed a day of camaraderie, friendly competition, and networking. The event grossed in excess of $31,000 and netted approximately $17,000. Three, $2,000 scholarships, sponsored by Dairy Farmers of America, MDVA Milk Producers COOP and Altech Biotechnology, were awarded.

Next year’s Hokie Cow Classic will take place shortly after spring commencement. Mark your calendars and plan to help with the tournament yourself.

If you know of organizations or individuals that might be willing to support and/or participate in next year’s tournament please contact Dr. Knowlton, or David Winston. We’ll make sure that a contact is made.

Virginia Tech Dairy Cattle Judging Team 1 finished another successful year placing 6th overall at World Dairy Expo and 2nd at both the Eastern States Exposition and Harrisburg All-American contests. Team members were Abby Patch, Lebanon NH, Caitlin Patrick, Woodbine, MD, Rachel Smith, Mcaheysville, VA, and Brittany Willing, Bear, DE. Both Rachel and Caitlin earned All-American honors for their performance in the World Dairy Expo contest. Brittany was High Individual at
ensuring that students are prepared for their careers. About half of our graduates go into herd and farm management. A bout one-half of our students are not from dairy farms, or have no dairy background. Thus, faculty focus on individual advising, financial management, “hands-on” learning, and on industry internships and special study experiences to provide students with exposure to progressive, large-herd enterprises around the country. Many of these students go on to agribusiness careers or to veterinary college, graduate school or into the extension education.

DASC extracurricular activities flourish. Judging teams have been the National Champions in 3 of the past 5 years, and the Dairy Management Challenge teams have won Gold or Platinum at the National Contest in 8 years of the contest. Likewise the VA Tech Dairy Club has continued its traditional winning ways in both national and regional ADSA competition. The club earns funds through the phenomenal growth of its milk shake sales at VA Tech football and basketball games and State Fair, and also from profits earned by conducting the Showcase Sale of Virginia Tech. These increased revenues have now made it possible for international Dairy Club trips to be planned periodically. For example the club will visit Germany in 2011.

Extension Programs

Area Dairy Conferences were conducted at five locations in Virginia during January 2010. Conferences concentrated on reproductive management. Dr. Ray Nebel, formerly Extension Specialist at Virginia Tech and currently with Select Sire Power, was the featured speaker at all locations. In addition Dr. John Currin, Extension Veterinarian, discussed fertility, Dr. Bob James, Extension Dairy Specialist, discussed managing the transition cow, and Dr. Bennet Cassel, Extension Dairy Specialist, discussed fertility evaluations.

Dr. Ken Leslie, visiting scientist from the University of Guelph, shared his expertise on calf nutrition and health. The annual Virginia State Feed Association Conference and Nutritional Management Cow College was conducted in February 2010 at the Hotel Roanoke. This is a joint program of the Virginia State Feed Association, Virginia Cooperative Extension, and Dairy Science. Outside speakers included Dr. Mike Allen from Michigan State University, Dr. Gabriella Varga of Penn State University, and Dr. Donald Sackett of the University of Wisconsin. Various other feed industry speakers also participated.

In October 2010 the Second International Dairy Management Short Course and Tour was conducted at the Hotel Roanoke and Conference Center. The first one was conducted in 2008. Twenty-two Egyptian and Turkish dairy producers and support personnel attended the week long course. Extension Specialists from the Dairy Science Department discussed topics such as genetic evaluation (Dr. Bennet Cassel), mastitis control and milk culturing (Dr. Christina Petersson-Wolfe), young calf feeding and feed management (Dr. Bob James), new research in protein nutrition (Dr. Mark Hanigan), and the changing US and Virginia dairy industry (Dr. Charlie Stallings). A visit was made to the Virginia Tech Dairy Center where Shane Brannock, Dairy Center Manager, described the operation and guided the group. Farms were also visited in Franklin and Pittsylvania Counties.

Undergraduate program summary

The Dairy Science program (DASC) has 104 undergraduate majors and dual majors. Fueled by the Academic Common Market (ACM) program, many out of state students enroll in our department. This agreement is with the states of DE, MD, SC and TN. Virginia Tech DASC qualifies because we remain a stand-alone department with coursework not offered by many other universities. Under the ACM Virginia Tech waives out-of-state tuition fees. All students take courses in basic nutrition, physiology, genetics, economics, and reproduction, and then various upper level classes such as applied dairy nutrition, applied reproductive management, applied dairy genetics, applied lactation physiology, and a two semester capstone series of applied dairy business management.

The curriculum offers three academic options: Dairy Enterprise Management, Prevet and Dual Emphasis. We’ve deliberately structured our program to maximize student flexibility while ensuring that students are prepared for their careers. About half of our graduates go into herd and farm management. About one-half of our students are not from dairy farms, or have no dairy background. Thus, faculty focus on individual advising, financial management, “hands-on” learning, and on industry internships and special study experiences to provide students with exposure to progressive, large-herd enterprises around the country. Many of these students go on to agribusiness careers or to veterinary college, graduate school or into the extension education.

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**Graduate program summary**

**Recent Graduates**

Ranga Appuhamy completed his Ph.D. in February under the direction of Dr. Hanigan. Dr. Appuhamy is currently working as a post-doctoral researcher at the University of Guelph with Dr. Jim France. His dissertation was entitled “Regulatory roles of essential amino acids, energy, and insulin in mammary cell protein synthesis”.

Mini Bharathan, a student of Dr. Mullarky’s, defended her dissertation in October. Dr. Bharathan, who also holds a DVM from India and MS from South Dakota State, is seeking further research opportunities related to pathology. Her dissertation was entitled “Monocyte derived dendritic cells: sentinels and translators of immune response”.

Karen Brown, Chesapeake, VA, finished her MS program with Dr. Gwazdauskas and Dr. Cassell this spring. Karen worked on evaluating hormonal and blood metabolite differences in the crossbreeding study. Her thesis was entitled “Hormones, metabolites, and reproduction in Holsteins, Jerseys, and their crosses”.

Joby Cyriac finished his Ph.D. with Dr. Hanigan. He and his wife are currently residing in Texas. His dissertation was entitled “Lowering ruminally degraded protein in lactating dairy cow diets”.

Marya Dunlap, Charlottesville, VA, completed a Masters program with Dr. Gwazdauskas. Marya worked on improving the efficiency of transgenic animal production by using electroporation procedures on early mouse embryos and condensation of DNA in conjunction with microinjection. Her thesis was entitled “The in vitro transgene expression and in vivo transgene integration of condensed DNA injected into the cytoplasm of murine zygotes”.

Brandy Huderson, who worked with Dr. Akers, defended her dissertation in January. Dr. Huderson, a native of New Orleans, LA, is currently working as a post-doctoral researcher at Tulane University. Her dissertation was entitled “The role of exogenous somatotropin, ovariectomy and extracellular matrix in bovine mammary gland development”.

Stephanie Masiello completed her MS degree under the direction of Dr. Petersson-Wolfe. Stephanie is currently in a Ph.D. program in Food Science at Cornell University. Her thesis was entitled “Implications of the ability of Enterococcus spp. to survive the ensiling process and bovine gastrointestinal tract on the risk of bovine mastitis.”

Nick Maxymiv finished his MS in late December 2009. Dr. Mullarky was his advisor. Nick is currently a student in the VA College of Osteopathic Medicine. His thesis was entitled “Characterization of dendritic cells in the bovine mammary gland.”

Alicia Nedrow completed her MS degree with Dr. Mullarky in late 2009. Her thesis was entitled “Ability of Klebsiella spp. mastitis isolates to produce virulence factors for enhanced evasion of bovine innate immunity.”

Allison Smith completed her MS with Dr. Mullarky in October. Allison will be working for Dr. Jamie Boehmer at the Veterinary Division of FDA in Beltsville, Maryland. Dr. Boehmer completed an MS degree with Dr. Pearson in 1996. Allison’s thesis was entitled “A porcine model for polymicrobial respiratory infections with swine influenza virus and Staphylococcus aureus.”

**Current Students**

Michelle Aguilar, who received her BS in APSC, is a Pratt scholar working on her MS with Dr. Hanigan to better understand N cycling in cattle.

Sebastian Arriola is a Ph.D. student with Dr. Hanigan. He is a Pratt fellow and is working on regulation of protein synthesis and mathematical modeling of nitrogen and phosphorus metabolism. Sebastian is from Uruguay.

Ashley Bell, a MS student, is also working with Dr. Hanigan. She is also involved in amino acid regulation of milk protein synthesis with the goal of providing information that can be used to better define amino acid requirements.

Sandip Ghimire is working on his Ph.D. with Dr. Hanigan. He completed MS and BS degrees from Tribhuvan University Nepal. His research will focus on studying enteric methane production.

Jamie Jarrett, a Ph.D. student with Dr. Knowlton, is studying...
digestion and absorption of phosphorus in dairy cows. Her research goal is to better predict the availability of phosphorus in byproduct feeds.

**Hayden Karp**, an MS student with Dr. Petersson-Wolfe will complete his program this fall. He has worked to both validate and calibrate the new AfILab system at the Dairy Center and is focused on use of real-time milk lactose measurements as a an indicator of mastitis.

**Liying Ma** is a Ph.D. student from China who is working with Dr. Corl. She is studying the regulation of milk fat synthesis by transcription factors present in the mammary gland.

**Kayla Machado** is working on her MS with Dr. James. She is from a large herd farm in Manteca, CA. Her research involves studying the impact of different housing systems and nutritional management on health and growth of Holstein calves.

**Manisha Manickam** has recently begun her Ph.D. studies with Dr. Mullarky. She anticipates that she will be working on identifying protein differences between commensal and pathogenic isolates of *Staphylococcus aureus*. Her goal is to identify the proteins that *S. aureus* uses to establish infection and cause disease.

**Deepthi Nayanajalie** is beginning her second year of Ph.D. studies under the direction of Dr. Hanigan. She is working on energy and nitrogen metabolism in dairy cattle.

**Rebecca Ortiz** is a Ph.D. student with Dr. Mullarky. Her dissertation research is focused on deciphering a role for complement during *Staphylococcus aureus* infections. Becky works on several projects in the laboratory that include her dissertation research to identify a role for complement during *S. aureus* infection and an additional project to evaluate the mechanisms of actions of probiotics.

**Partha Ray** is pursuing his Ph.D. under the direction of Dr. Knowlton. He is working to develop new methods to analyze feed for specific phosphorus-containing compounds.

**Jennifer Stamey** is a Ph.D. candidate with Dr. Corl. She is investigating the role of specific proteins, fatty acid binding proteins, present in the mammary epithelial cell that may control the metabolic fate of fatty acids.

**Brittany Stewart** is an MS student with Dr. James. Brittany is from Stafford, VA and she is working to determine the influence of use of feed management software on whole farm nutrient balance and feed management on 8 VA dairies. Brittany will complete her degree in the spring semester.

**Callie Thames** is an MS student with Dr. Knowlton. Callie is studying the excretion of antibiotic resistance genes by calves fed medicated milk replacers.

**Andrea Tholen** has recently begun MS studies with Dr. Petersson-Wolfe. Her research will be focused on the use of daily milk component and activity data for the early detection of disease.

**Emily Yeiser** is also an MS student with Dr. Petersson-Wolfe. Her research is focused on the use of activity measures to examine dairy cow well-being.
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Dairy Club Stays on the Mooove

The Dairy Club with about 90 members participate in various activities that include ice cream social, fall picnic, fall pledging, milkshake coordinator, State Fair Dairy Bar, football and basketball milkshake concessions, Dairy Science Open House, Thanksgiving dinner, Hoard’s Judging Contest, Winter Social, VSDA Annual Meeting, Southern ADSA, spring pledging, Little All American Show and Banquet, youth judging contest, senior reception, National ADSA, Milky Way, intramurals, service/education, social, and Big/Little program.

The Dairy Club had a successful trip to the Southern ADSA-SAD Annual Meeting in February. Hosted by Alabama A&M, there was no overall chapter winner selected but the club received the following awards:

1st place Quiz bowl team
2nd Place Chapter Scrapbook
1st Place Original Research Paper (Dare Shepherd)
2nd Place Dairy Foods Paper (Holley Weeks)

At the National ADSA meeting in Denver, the club and its members received the following honors and awards:

2nd Place - Chapter Award
2nd Place – Original Paper (Dare Shepherd)
2nd Place - Chapter Yearbook
3rd Vice President (Parker Welch)

The Club will be hosting the Little All American Dairy Show and Banquet in Blacksburg on April 16, 2011. Contact Paula Craun (pcraun@vt.edu) for show information or Abby Patch for banquet information (apatch12@vt.edu).

2010-2011 Officers:
President: Parker Welch
1st Vice-President: Derek Heizer
2nd Vice-Pres.: Paula Craun
Secretary: Brittany Willing
Treasurer: Brittany Thompson
Reporter: Rachel Smith
Recruiting Rep.: Caitlin Patrick
Dairy Ambassador: Chris Potts

Advisors: Mr. Dave Winston, Dr. Mark Hanigan, Dr. Bob James, Dr. Katharine Knowlton.