



# InFocus

Research Animal Resource Center



## New RARC A7 Facility Opens

A7, the first of the RARC facilities to be renovated and expanded, opened the week of October 27<sup>th</sup>. The new facility contains a number of significant enhancements including an expanded centralized cage wash center, high level rodent barrier, hazardous materials suite, an enhanced animal BSL-3 facility, zebrafish holding room, and several procedure laboratories.

racks and the ability of RARC staff to change cages without having to move ventilated cage racks for cage change (see image). This feature will be employed extensively on C7.

C7 will eventually hold the vast majority of WCMC's mouse population. As the newly renovated A7 facility is slightly smaller than C7, laboratories have been requested to house a slightly larger number of cages on S3. Importantly, RARC now has greater access to housing space on S-3 for mouse housing and therefore requests for colony expansion can be addressed.

Phase 2, which involves the renovation of C7, is expected to be completed in April '09 with the final and last phase, the renovation of S3, should be completed in early 2010. It is important to note that access to A7 will be restricted to the freight elevators (animal transport) as access to the 7<sup>th</sup> floor will be restricted from the A/C bldg. elevators. Staff without animals or equipment can use NYPH's K-Wing elevators or the 6C stairwell (proximity card controlled).



As the C7 facility was recently closed for renovation, A7 and S3 must now support WCMC's animal care and use program while C7 undergoes renovation. As a result, many of the new features provided in A7 will not be used as intended until renovations are complete. One feature to note in many of the A7 mouse holding rooms is the new room layout which allows easier access to cage

### Inside Interest:

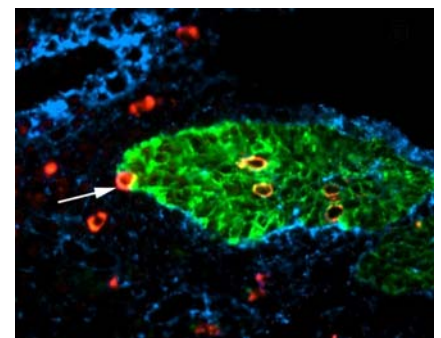
**Bisphenol-A  
A concern for  
research??**

**Emerging  
Diseases Series -  
Mouse Parvovirus  
(MPV)**

## Cervical (Second) Thymus Detected in Mice

The phenotypic and functional characterization of a second (cervical) thymus was recently described in adult mice by Terszowski and colleagues (Science Vol. 312, 284-287; 2006). The cervical thymus is distinct from the thoracic thymus and reaches the size of a small lymph node. Like the thoracic thymus, the tissue has a medullary-cortical architecture, stains positively for cytokeratin, and contains CD4 + CD8+ double positive thymocytes as well as CD4 + and CD8 + single positive cells. Expression of Rag1, Rag2, TdT and other genes characteristic of thymopoiesis was demonstrated. In some mice, cervical thymi are paired organs, whereas in others there is only a single organ.

transplanted into athymic nude mice. Although the presence of a thymic organ in the cervical region of mice has been suspected for some time, this is the first functional characterization of this tissue. This article suggests scientists reevaluate the effects of thoracic thymectomy.



Cervical thymi were present in 90% of BALB/c mice examined but only 50% of C57BL/6 mice. Cells from the cervical thymus corrected T-cell deficiency when

Confocal picture of a frozen tissue section of an early embryonic mouse thymus  
<http://www.stemcells.bham.ac.uk/research/anderson.sht>

## Training Session Evaluations are Important!

RARC's Education & Quality Assurance service offers many different training opportunities. These range from didactic lecture sessions such as the New Investigator Orientation and Hazardous Material Agent Use to special technique wet lab sessions like Oral Gavage and Tail Vein Injections. We regularly update these sessions to better meet the needs of our investigative staff.

*Help us help you* by completing and returning the evaluation sheets offered at the end of each session. We welcome all feedback, especially comments and critiques. Evaluations can be returned anonymously.

For more information please contact RARC's Education & Quality Assurance department by email at [rarc\\_eqa@med.cornell.edu](mailto:rarc_eqa@med.cornell.edu)



*We really do read them all!*

## Bisphenol A - A concern for research?

Bisphenol A (BPA) is a monomer with estrogenic activity. BPA is found in food packaging, dental sealants, and as recently publicized in the lay press, in plastic baby bottles.

There are disparate viewpoints as to whether BPA is a public health concern. Bisphenol A is reported to be a harmful hormone disrupting chemical ([www.bisphenolafree.org](http://www.bisphenolafree.org)) or a chemical whose safety with regards to human exposure has been repeatedly proven ([www.bisphenol-a.org](http://www.bisphenol-a.org)).

Regardless of the outcome of the ongoing debate, the impact of BPA may be a concern for research facilities. BPA is the monomer which is polymerized to produce a variety of thermoplastics, including polycarbonate and polysulfone. Both plastics are used extensively to produce rodent and aquatic species caging and rodent water bottles throughout the globe.

BPA has been observed to leach from plastic at the elevated temperatures and alkaline conditions used in cage washing. Unreacted BPA may also leach from these materials when new. BPA leaching is

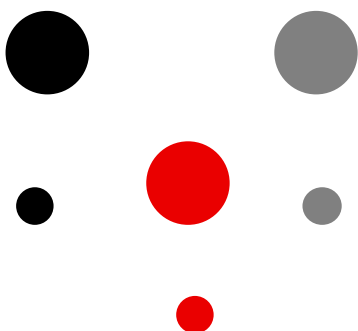
greatest in old polycarbonate cages, and appears to be related to repeated washing. The ester linkage between polymerized BPA molecules can be hydrolyzed when the material is exposed to water for extended time periods and/or while washing polycarbonate at high temperature. The amide link between BPA monomers in polysulfone is more resistant to hydrolysis.

Exposure of rodents to increased levels of BPA can result in accelerated puberty and increased proliferation of mammary tissue, among other physiological effects.

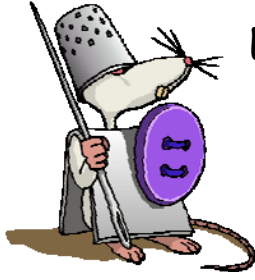
It has been proposed that BPA may be a significant problem for aquatic species housed in tanks made from BPA-containing thermoplastic. Investigators have shown that water treated with low levels of BPA can significantly alter the sex ratio towards females in *Xenopus laevis* tadpoles, and at higher levels can have lethal and teratogenic effects on amphibian embryos.

RARC is concerned about the impact of BPA and has taken steps to reduce the likelihood of exposure. RARC only purchases rodent caging and bottles made of polysulfone which has been shown to release less BPA than polycarbonate. RARC does not use chemicals when washing thermoplastics. RARC's aquatic systems employ carbon filters, which should be effective at removing BPA from water. Whenever possible, tanks manufactured from plastics which do not contain BPA are purchased.

If you have further questions or concerns regarding BPA, please contact RARC for more information.

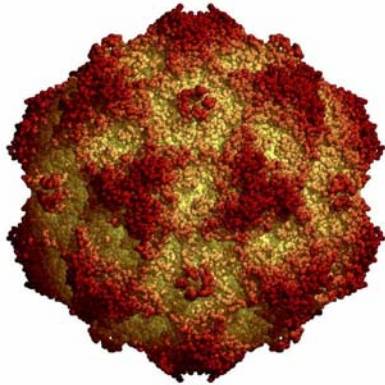




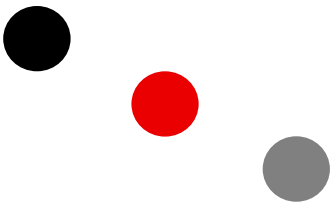


## Emerging Diseases Series – Mouse Parvovirus

There are a number of different parvoviruses that infect laboratory rodents. In mice, minute virus of mice (MVM) was first described in 1966 and is the prototype strain. It can still be found in research colonies, but it has become very rare. In 1993, a new parvovirus that partially cross-reacted with MVM in some serological tests was identified in mice. The new virus was initially called orphan parvovirus, but subsequently was given the name mouse parvovirus (MPV). Aside from mouse norovirus (see our spring newsletter), MPV is the most commonly found murine virus in research mouse colonies around the globe today.



*Graphic rendering of parvovirus virion based on x-ray crystallography*



Parvoviruses are very small, non-enveloped, DNA viruses which makes them highly resistant to the environment. MPV has been shown to remain infectious on a dry surface for up to 7 weeks.

MPV primarily infects the intestinal tract and is shed in the feces. In immunocompetent mice, the virus spreads from the intestine to other organs and can cause a persistent infection in mesenteric lymph nodes. Infectious virus can remain there for more than 9 weeks; however, shedding of virus generally ceases after 4 - 6 weeks. Transmission is by the fecal-oral route, either by direct contact between animals or via fomites, such as contaminated gloves, instruments, etc. Generally the virus spreads slowly through the facility since inter-cage transmission is inefficient. If individually ventilated cages are used and all cage manipulations are done in a change station using appropriate technique, as is done at WCMC, the virus may not be able to sustain itself over time.

There are no clinical signs associated with MPV infection. However, subclinical infection has the potential to interfere with research. The virus was originally identified because it interfered with an in-vitro assay using T cells derived from infected mice. Other immune-modulating effects

have also been reported in the literature. In addition, the virus can alter the kinetics of transplanted tumors and potentiate the rejection of tissue grafts. There may be other effects that have yet to be recognized.

Historically, we had a series of MPV outbreaks at WCMC from 2001 to 2003. We were able to contain the virus and the colonies affected by the initial outbreaks were rederived by embryo transfer. After the last occurrence we believe we were able to identify the source of the recurring infections based on the timing and pattern of the outbreaks.

We concluded the virus was most likely introduced via the feed which had been produced from grain that had been contaminated by feral mice shedding the virus. Because the virus is highly resistant to environmental conditions we suspected it survived feed processing. We were unable to prove this directly, but after switching to irradiated feed that is flash autoclaved into the facility before use, MPV outbreaks stopped. Once the infectious source was eliminated the virus could no longer sustain itself in the colonies and disappeared.

Based on observations at other institutions MPV seems to be making a comeback at this time. We are actively monitoring potential sources such as introduction of mice from other sources, feral mice, biologicals such as tumors, cell lines or other mouse products and feed, bedding and other fomites in order to prevent a new outbreak at WCMC.



Parvovirus cluster.  
Source: <http://uct.ac.za/depts/mmi/stannard/parvo-em.html>

### TRAINING SESSIONS: NOV. - JAN.

#### RARC Orientation

Tuesday, 11/4/08, 2:30-5:00  
Thursday, 11/20/08, 10:00-12:30  
Tuesday, 12/2/08, 2:30-5:00  
Thursday, 12/18/08, 10:00-12:30  
Tuesday, 1/6/09, 2:30-5:00  
Thursday, 1/15/09, 10:00-12:30

#### Xenograft Training

Monday, 11/17/08, 2:30 - 3:30  
Monday, 12/15/08, 2:30 - 3:30  
Tuesday, 1/26/09, 2:30 - 3:30

#### Hazardous Materials Training

Wednesday, 11/19/08, 2:30 - 3:30  
Wednesday, 12/17/08, 2:30 - 3:30  
Wednesday, 1/28/09, 2:30 - 3:30

#### Rodent Surgery

Friday, 11/7/08, 10:30-12:00, wet lab  
Monday, 11/17/08, 10:30-11:30  
Friday, 12/5/08, 10:30-12:00, wet lab  
Monday, 12/15/08, 10:30-11:30  
Friday, 1/2/09, 10:00-11:30, wet lab  
Tuesday, 1/20/09, 10:30-11:30

Nov & Dec  
Seminars

All are  
welcomed to  
attend!

*\*UPCOMING SEMINARS\**

**ESTABLISHING A CULTURE OF CARE  
FROM THE INSIDE OUT**

*Jayne Mackta, President & CEO of Global  
Research Education and Training*

*Place: Hoffman Auditorium, Room C186  
444 E. 67<sup>th</sup> street*

*Date: Thursday, November 6*

*Time: 1:30 - 2:30 PM*

**A PRIMER ON RODENT BREEDING**

*Holly Burr, DVM, Post Doctoral Fellow, Tri-  
Institutional Laboratory Animal Medicine*

*Training Program*

*Place: MSKCC, RRL, Room 101*

*Date: Wednesday, December 17*

*Time: 2:00 - 3:30*

**ABOUT OUR DEPARTMENT-**

**Office of the Director: (212) 746-1031**

**Office of the Manager: (212) 746-1023**

**Administration & Information Services: (646) 888-2406**

[rarc\\_adm@med.cornell.edu](mailto:rarc_adm@med.cornell.edu)

**Biosecurity: (646) 888-2403**

**Education & Quality Assurance: (212) 746-1077**

[rarc\\_eqa@med.cornell.edu](mailto:rarc_eqa@med.cornell.edu)

**Husbandry & Operations: (646) 888-2413**

[rarc\\_ho@med.cornell.edu](mailto:rarc_ho@med.cornell.edu)

**Laboratory of Comparative Pathology: (646) 888-2422**

[rarc\\_lcp@med.cornell.edu](mailto:rarc_lcp@med.cornell.edu)

**Veterinary Services: (212) 746-1167**

[rarc\\_vs@med.cornell.edu](mailto:rarc_vs@med.cornell.edu)

**EMERGENCIES: (212) 746-1022**

