CELEBRATES SCIENCE

DECEMBER 2018

KNOWLEDGE AND INFORMATION MANAGEMENT SERVICES
**TOP 5 ARTICLES**

**Article:**


**Impact Factor:** 18.705

**Summary:**

Over the past few decades, the burden of high blood pressure has shifted from high-income to low-income and middle-income countries, including sub-Saharan Africa.1 Raised blood pressure is accompanied by rising obesity trends, with 68% of South African women and 31% of men being overweight or obese.2 In South Africa, the age-standardised death rates for non-communicable diseases (NCDs) are now higher than those of HIV/AIDS and tuberculosis combined,3, 4 with cardiovascular disease being the leading category of NCDs.
Article:
Impact Factor: 7.422

Summary:
During 2016-2017, when Kruger National Park, South Africa, was under quarantine to limit bovine tuberculosis spread, we examined 35 white and 5 black rhinoceroses for infection. We found 6 infected white rhinoceroses during times of nutritional stress. Further research on Mycobacterium bovis pathogenesis in white rhinoceroses is needed.
Article:

Impact Factor: 7.360

Summary:
Basic leucine zipper transcription factor 2 (Batf2) activation is detrimental in Type 1-controlled infectious diseases, demonstrated during infection with Mycobacterium tuberculosis (Mtbc) and Listeria monocytogenes Lm. In Batf2-deficient mice (Batf2-/-), infected with Mtbc or Lm, mice survived and displayed reduced tissue pathology compared to infected control mice. Indeed, pulmonary inflammatory macrophage recruitment, pro-inflammatory cytokines and immune effectors were also decreased during tuberculosis. This explains that batf2 mRNA predictive early biomarker found in active TB patients is increased in peripheral blood. Similarly, Lm infection in human macrophages and mouse spleen and liver also increased Batf2 expression. In striking contrast, Type 2-controlled schistosomiasis exacerbates during infected Batf2-/- mice with increased intestinal fibrogranulomatous inflammation, pro-fibrotic immune cells, and elevated cytokine production leading to wasting disease and early death. Together, these data strongly indicate that Batf2 differentially regulates Type 1 and Type 2 immunity in infectious diseases.
Directory: Prof Shane Norris

Article:
DOI: 10.1161/hypertensionaha.118.11992 [Original]
Impact Factor: 6.823

Summary:
Multiple perinatal and early life risk factors have been implicated in the development of hypertension. The BT20 (Birth to Twenty Plus) cohort in urban Soweto, South Africa, previously showed a prevalence of elevated blood pressure (EBP) that ranged from 22.4% at 5 years of age to 34.9% at 18 years of age. We sought to determine the prevalence of EBP at 23 years of age within this cohort and whether this could be linked to any maternal and early life factors and childhood and adolescent blood pressure trajectories. Blood pressure and anthropometric measurements were completed on cohort participants aged 23 years (n=1540; 49% men). Early life and maternal factors were obtained from previous data. Thirty-six percent of participants had EBP of whom 63% were men (P<0.001). The only association with maternal or early life factors was greater linear growth from birth to 2 years of age, which conferred a 19% increased risk (odds ratio, 1.19; 95% CI, 1.01-1.41). Women had a 77% lower risk of EBP (odds ratio, 0.23; 95% CI, 0.16-0.34) per SD. Participants within the highest systolic and diastolic blood pressure trajectories (where blood pressure was elevated early and remained elevated) were at significantly increased risk of EBP in early adulthood. For those in the highest systolic trajectory, this resulted in a 4-fold increased risk and for those in the highest diastolic trajectory, a 5-fold increased risk. These findings suggest that risk for EBP in adulthood may be set in childhood and adolescence.
Director: Dr Johan Louw

Article:
DOI: 10.3390/nu11010023 [Review]
Impact Factor: 4.196

Summary:
Metabolic complications in an obese state can be aggravated by an abnormal inflammatory response and enhanced production of reactive oxygen species. Pro-inflammatory response is known to be associated with the formation of toxic reactive oxygen species and subsequent generation of oxidative stress. Indeed, adipocytes from obese individuals display an altered adipokine profile, with upregulated expression and secretion of pro-inflammatory cytokines such as tumor necrosis factor alpha (TNF-α) and interleukin (IL-6). Interestingly, natural compounds, including phenolic enriched foods are increasingly explored for their ameliorative effects against various metabolic diseases. Of interest is gallic acid, a trihydroxybenzoic acid that has progressively demonstrated robust anti-obesity capabilities in various experimental models. In addition to reducing excessive lipid storage in obese subjects, gallic acid has been shown to specifically target the adipose tissue to suppress lipogenesis, improve insulin signaling, and concomitantly combat raised pro-inflammatory response and oxidative stress. This review will revise mechanisms involved in the pathophysiological effects of inflammation and oxidative stress in an obese state. To better inform on its therapeutic potential and improvement of human health, available evidence reporting on the anti-obesity properties of gallic acid and its derivatives will be discussed, with emphases on its modulatory effect on molecular mechanisms involved in insulin signaling, inflammation and oxidative stress.
1. **INTRAMURAL RESEARCH UNITS**

**Alcohol, Tobacco and Other Drug**


   **Impact Factor:** 2.214


   **Impact Factor:** 2.163

**Biomedical Research and Innovation Platform**


   **Impact Factor:** 4.196


   DOI: 10.3389/fendo.2018.00744 [Review]

   **Impact Factor:** 3.519


   **Impact Factor:** 3.105

**Centre for Tuberculosis**


   DOI: 10.3201/eid2412.180293 [Letter]

   **Impact Factor:** 7.422


   DOI: 10.1073/pnas.1801948115 [Original]

   **Impact Factor:** 9.504


**HIV Prevention**


**Non-Communicable Disease**


South African Cochrane Centre


Violence, Injury and Peace

   **Impact Factor: 1.864**

   **Impact Factor: None**

   **Impact Factor: None**

   DOI: 10.1080/10130950.2018.1533302 [Original]
   **Impact Factor: None**
2. EXTRAMURAL RESEARCH UNITS

Child and Adolescent Lung Health


   **Impact Factor:** 3.356


   **Impact Factor:** 6.048

Developmental Pathways for Health


   **Impact Factor:** 2.951


   **Impact Factor:** None


   **Impact Factor:** 5.306


   **Impact Factor:** 18.705

5. Odunitan-Wayas F, Okop K, Dover R, Alaba O, Micklesfield L, Puoane T, Uys M,
Impact Factor: 2.075

Impact Factor: 6.823

Impact Factor: 2.485

Impact Factor: 2.413

Gynaecological Cancer
Impact Factor: 2.163

Impact Factor: 5.511

HIV/TB Pathogenesis and Treatment
Impact Factor: 25.148

Hypertension and Cardiovascular Disease
Impact Factor: 18.705
**Impact Factor: 4.423**

**Immunology of Infectious Disease**
**Impact Factor: 7.360**

**Microbial Water Quality Monitoring**
1. **Ekundayo TC, Okoh AI.** Pathogenomics of virulence traits of plesiomonas shigelloides that were deemed inconclusive by traditional experimental approaches. Frontiers in Microbiology. 2018 Dec 21;9:3077. DOI: 10.3389/fmicb.2018.03077 [Original]  
**Impact Factor: 4.019**

**Respiratory and Meningeal Pathogens**
**Impact Factor: 2.766**

**Impact Factor: 2.229**

**Rural Public Health and Health Transition**
**Impact Factor: 3.929**

**Impact Factor: 53.254**

**Impact Factor: 53.254**
   **Impact Factor: 18.705**

**Stem Cell Research and Therapy**

   **Impact Factor: 2.471**

   **Impact Factor: 2.163**

   **Impact Factor: 3.989**
3. **GRANT FUNDED RESEARCH**

   **Impact Factor:** None

   DOI: 10.1080/17441692.2018.1560485 [Original]
   **Impact Factor:** 2.017

   DOI: 10.1093/ve/vey037 [Original]
   **Impact Factor:** None

   DOI: 10.1016/j.celrep.2018.11.058 [Original]
   **Impact Factor:** 8.032

   DOI: 10.1016/j.msec.2018.12.010 [Original]
   **Impact Factor:** 5.080

   DOI: 10.3390/ijerph15122793 [Original]
   **Impact Factor:** 2.145

   DOI: 10.1002/slct.201802930 [Original]
   **Impact Factor:** 1.505

   DOI: 10.3389/fphys.2018.01812 [Original]
   **Impact Factor:** 3.394

   **Impact Factor:** 3.345

**Impact Factor: None**
4. RESEARCH UNITS WITH NO QUALIFYING PUBLICATIONS

Intramural
- Biostatistics
- Burden of Disease
- Environment and Health
- Gender and Health
- Health Systems
- Office of AIDS Research
- Office of Cancer Research
- Office of Malaria Research
- Office of Tuberculosis Research
- Primate

Extramural
- Antiviral Gene Therapy
- Bioinformatics Capacity Development
- Centre for Antimicrobial Resistance
- Common Epithelial Cancer
- Drug Discovery and Development
- Health Services to Systems
- Herbal Drugs
- Maternal and Infant Health Care Strategies
- Molecular Mycobacteriology
- Precision and Genomic Medicine
- Prospective Gastrointestinal Cancer
- Risk and Resilience in Mental Disorders

Research Centre
- Advancing Care and Treatment (ACT) For TB/HIV
- Centre for Basic and Translational Human TB Research
- Centre for Multi-Disciplinary Research on Malaria
- Centre for Optimising Antimalarial Therapy in South Africa
- Centre for Sustainable Malaria Control
- Centre for Tuberculosis Biomarker-Targeted Intervention
- Clinical and Community HIV-Tuberculosis Research
- Soweto Matlosana SAMRC Collaborating Centre for HIV/AIDS and TB
- TB Free through Research and Innovation
- Tuberculosis Collaborating Centre for Child Health (TB-CHILD)
- Tygerberg SAMRC Collaborating centre for HIV Laboratory Research
- Wits Clinical HIV/TB Research Unit, WITS Health Consortium
- Wits RHI Collaborating Centre for HIV/AIDS
5. **GRANTS AWARDED**

<table>
<thead>
<tr>
<th>SAMRC Unit</th>
<th>Funder</th>
<th>Main Funder</th>
<th>Project Title/Description</th>
<th>Contract Value</th>
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<tbody>
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<td>Strategic Research Initiative</td>
<td>Strategic Research Initiative</td>
<td>Bill &amp; Melinda Gates</td>
<td>African Rotavirus Symposium series</td>
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