PARTNERSHIP FOR
clean competition

Research Insider

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IN THIS ISSUE

FROM THE DESK OF THE ED

Accurate, reliable information is essential for clean sport stakeholders to make informed choices about anti-doping services, programs, legislation, and the health and well-being of athletes. Whether you represent a sporting league, NADO, legal organization, academic institution, or are an athlete yourself, if you don't know where to turn for to up-to-date information and expertise, you could risk making a decision with pervasive or long-lasting negative consequences.

That's the main reason we started the PCC Conference: to educate all anti-doping stakeholders on new anti-doping achievements, scientific discoveries, and technologies, while offering a platform to discuss the best practices and challenges that matter to our attendees. We also welcome the unique opportunity the conference presents to put faces to names, develop new contacts and collaborators, and determine where the expertise may lie to help tackle a particular challenge outside of your organization's abilities.

It's also why the PCC began our blog, social channels, and this newsletter: to ensure you were aware of not only the developments the PCC considers particularly exciting (and there are many of these), but also opportunities and industry news that could benefit all anti-doping professionals, regardless of your role in the movement.

This newsletter in particular will discuss a remarkable new collection technology that we believe will completely change the landscape of in-competition testing across sports. We will also reveal some of our acclaimed conference speakers, unveil our new corporate sponsor, introduce you to our 2018 PCC Fellows, and remind you of the opportunities and deadlines for financial support (including travel grants!) the PCC offers.

The PCC is proud to lend our expertise and insight to such an amazing community of clean sport advocates, and to learn from all of you in return. We hope you will continue following along this important journey with us, and we certainly hope to see you at #PCC2019 in April 2019.

Respectfully,
Michael Pearlmutter

Dr. Danielle Moncrieffe, PCC Fellow

A Novel Breath Testing Kit for Sports Anti-Doping

The Bush House Auditorium, Future Site of #PCC2019

JUST Breathe

THE SCIENCE BEHIND THE PCC'S GROUNDBREAKING EXHALED BREATH TECHNOLOGY

In 2016, the PCC teamed up with Sensabues and Prof. Mario Thevis, Director of the Cologne Anti-Doping Laboratory, to breathe new life into in-competition collection methods. We interviewed Prof. Thevis to find out how his scientific curiosity led to the development of a potential game-changer for sports anti-doping (and we promise there are no more puns).

How did you become involved with the exhaled breath project?

I was contacted by SensAbues, who has been developing prototype exhaled breath (EB) sample collection devices that have been used in other fields of research, mostly toxicology, before. The data available was interesting but I have to admit that I was skeptical in the beginning as to the benefit of EB sampling in doping controls over currently available conventional matrices such as urine and blood as well as other alternative matrices (e.g. dried blood spots, dried plasma spots, and oral fluid). Fortunately, curiosity won and more literature research and more scientific discussions followed, which eventually led to the first studies on EB sampling as a potential tool in doping controls.

Why was the PCC a good partner for this research?

The PCC has been open to the idea of alternative test matrices already in the past, especially when these matrices have suggested the potential to lower the athletes' burden of doping control procedures while aspects critical to the drug testing programs are maintained. If the intrusiveness and invasiveness of doping controls can be reduced or even eliminated while relevant drugs remain detectable with adequate detection windows for the respective clientele, then the idea of exploiting new options of sample collection and analysis are most welcome.

PROF. MARIO THEVIS

A forensic chemist, Prof. Thevis has been funded nine times by the PCC since 2009, most recently for his work with exhaled breath, but also for important work on growth hormone and meldonium. Currently Head of the Centre for Preventative Doping Research, Prof. Thevis is also Vice President for Research at the German Sport University Cologne, Editor-in-Chief of *Drug Testing and Analysis*, a World Anti-Doping Agency (WADA) Prohibited List Consultant, and one of the world's leading doping experts.

JUST Breathe

THE SCIENCE BEHIND THE PCC'S GROUNDBREAKING EXHALED BREATH TECHNOLOGY

Why is now the right time for exhaled breath in anti-doping?

A major limitation of EB sampling has certainly been the collection procedure and the minute amounts of drugs made available from EB. This has required advanced collection device developments and analytical approaches of utmost instrumental sensitivity, both of which are now available. There is still need to further fine-tune and optimize the entire process, but all tools are at hand and the utility of EB testing should therefore be assessed as soon as possible.

How will this sample collection method solve some of the challenges leagues/sports are experiencing?

Due to the lack of any invasive or intrusive aspect of EB sampling, the obstacles of blood or urine collection requiring venipuncture or visual control do not exist. This allows a procedure much more convenient for the tested athletes and offers also substantial advantages, e.g. when the necessity of doping controls is introduced to minors.

What challenges needed to be overcome before the technology could be ready for an anti-doping context?

EB testing is a comparably recent development and a number of questions need to be answered. For instance, little is known about interindividual differences in eliminating drugs via EB, i.e. is there an influence of smoking on the presence of drugs in EB or do athletes of different sports or sex eliminate drugs differently. Further, detection windows need to be tested at least for a representative subset of compounds to allow for estimating the utility of EB for the various different doping agents prohibited either at all times or in-competition only.

PCC FIELD TRIALS

Once the PCC received confirmation from Prof. Thevis that exhaled breath technology was viable within an anti-doping context, field trials were arranged to assess how the new collection methodology worked in a real-world environment.

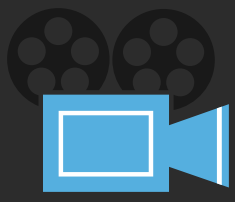
Completed in early October 2018, the field trials involved the collection of more than 500 (anonymous) samples from Minor League Baseball Players.

The samples are currently being analyzed against controls by Dr. Daniel Eichner at the SMRTL laboratory in Utah, and we should have exciting news to share with you soon.

We would like to thank the following partners for making the field trials possible:
CDT, MLB, USADA. SMRTL, SensAbues.

LEARN MORE

Click below for a brief video overview of exhaled breath (EB) field trial dynamics.



EB Field Trials: Why?

EB Field Trials: How?

How difficult will it be for WADA labs to implement analysis for EB testing?

Analytically, EB tests will not be a major challenge for WADA-accredited laboratories. All laboratories are equipped with the required instrumentation; it might however need dedicated testing methods, personnel and instrument time, but that would apply to additional blood or urine samples as well.

Can you give us an overview of how the breath kits will be analyzed for PEDs?

The methodology that we currently use is particularly straightforward. The collection device can either be extracted as a whole or, after opening the plastic housing, the employed electret membrane is recovered and extracted. The organic solvent used for the extraction is then concentrated, and the resulting volume is either analyzed immediately for target substances such as simulants, narcotics, corticoids, etc. or further derivatization steps are conducted prior to chromatographic-mass spectrometric analyses. These analyses are very similar to those applied to conventional doping control matrices, which simplifies the implementation of EB into routine doping controls substantially.

Who should be excited about this new technology?

There are a number of advantages that EB offers to athletes but also to the organization requesting the doping analysis. Samples are quickly collected and, according to current knowledge, stable during shipping and storage without the need for cooled transport. This needs to be verified in more detail but if confirmed, costs associated with the collection can be reduced compared to blood and urine testing. Testing menus might necessitate tailoring for specific sports, but that can be done on the laboratory level.

PEOPLE BEHIND THE SCIENCE PODCAST

Prof. Thevis will be featured on the People Behind the Science (PBTS) Podcast on Monday, November 19th.

The podcast explores the lives and experiences of the people behind the fascinating research and scientific discoveries of today.

We encourage you to learn more about Mario's fascinating career via: iTunes, Stitcher, the PBTS website, or other popular sources

(click on each name to learn more!).

Listen on Apple Podcasts

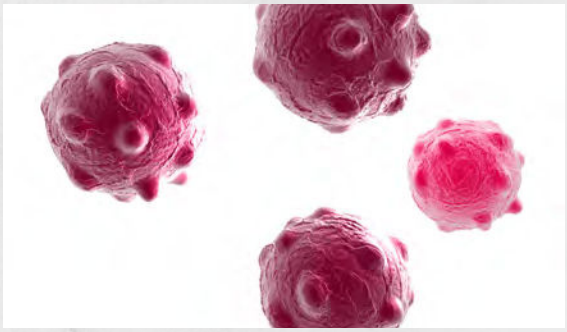
AVAILABLE ON STITCHER

Interviews with some of the most brilliant minds in science.

WORKING GROUP UPDATE

HEMATOLOGY

The PCC's newest working group will focus on the detection and pragmatic analysis of blood doping, such as through autologous or homologous transfusions or Erythropoiesis Stimulating Agents. An international and cross functional team has been assembled to begin this important work.



DRIED PLASMA

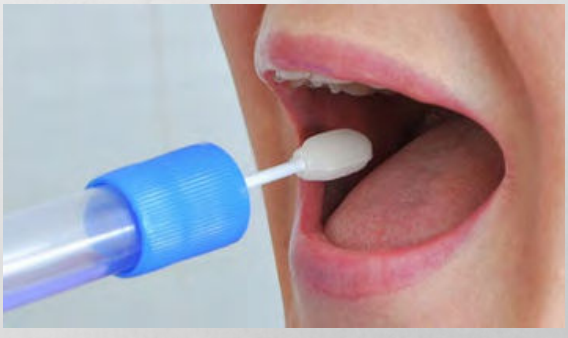
Since 2017 PCC researchers have been developing and gathering feedback on multiple Dried Plasma Spot Card prototypes. The latest generation of cards will move onto the next stage and undergo quantitative analysis at SMRTL in November 2018.

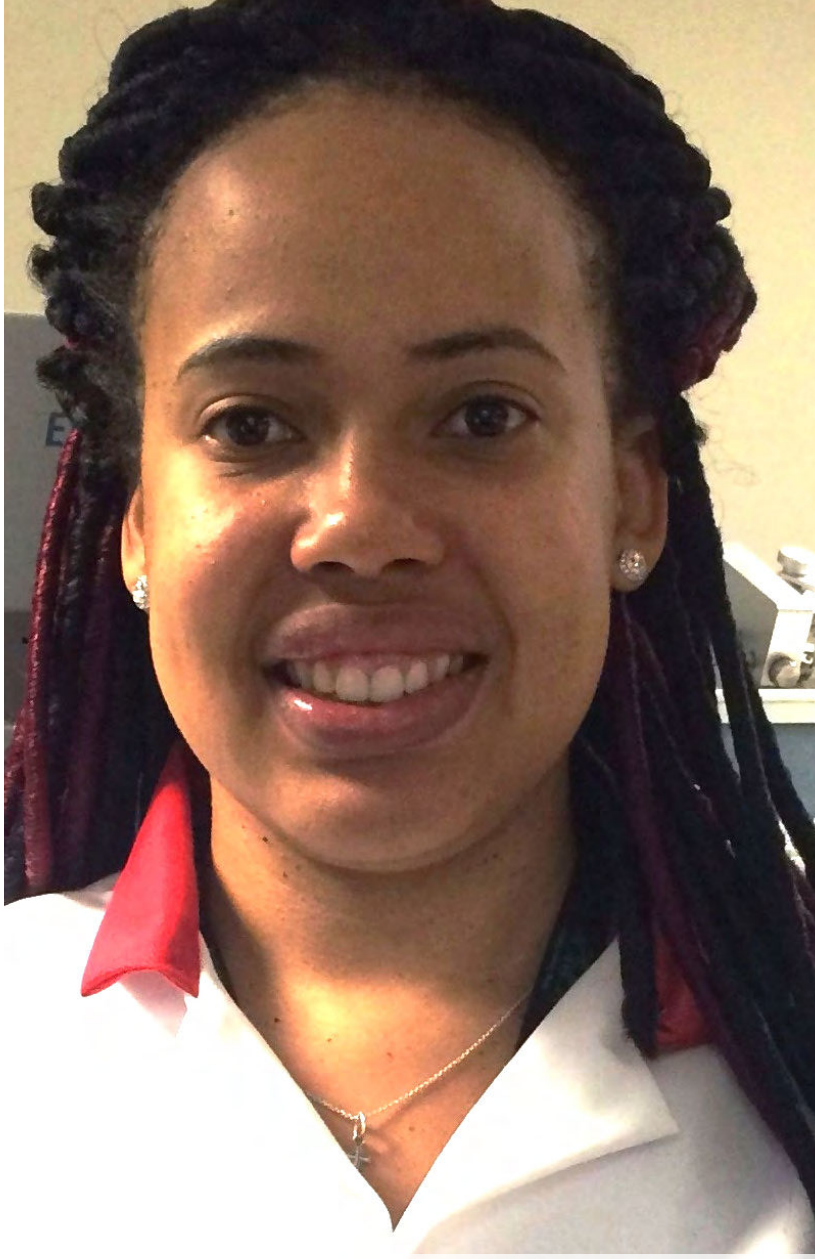
IGF-1

Scientists representing five anti-doping labs successfully developed and implemented a "bottom-up" method for analysis in late 2016. Current efforts surround the validation of a "top-down" method, which will be easier for remaining WADA labs to adopt, and can be incorporated with the Athlete Biological Passport (ABP).

ORAL FLUIDS

The PCC recently performed field trials to assess the feasibility of using alternative matrices for in-competition athlete sample collection. The results of the study, which trialed both exhaled breath and oral fluids, will be available in late 2018. See page 4 for additional trial details.





The Future

OF ANTI-DOPING

CONGRATULATIONS TO OUR 2018 PCC FELLOWS!

Dr. Laura Garvican-Lewis will continue her research on plasma volume corrections at Australian Catholic University.

Dr. Danielle Moncrieffe will focus her research on protein quantification at the Drug Control Center in London.

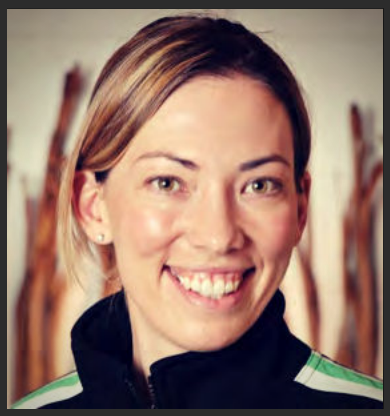
#PCC 2019

APRIL 16-18, 2019. KING'S COLLEGE LONDON.

"THE GREATEST ANTI-DOPING CONFERENCE I HAVE EVER ATTENDED."
- JON COYLES, MAJOR LEAGUE BASEBALL, ON THE PCC'S 2017 EVENT

CONFIRMED SPEAKERS

David HOWMAN
Chair, Athletes Integrity Unit



Beckie SCOTT
CEO - Spirit North

Travis TYGART
CEO, USADA

Ali JAWAD
British Paralympic Powerlifter

THANK YOU to our Conference Sponsors

THE FOLLOWING ORGANIZATIONS HAVE MADE THE PCC CONFERENCE NOT ONLY POSSIBLE, BUT EXCEPTIONAL.

Gold: CDT Comprehensive Drug Testing · UKAD Protecting Sport

Silver: Drug Free Sport · NSF · arc Making Chemical Analysis Easy

Partner: King's College London · Leeds Beckett University

DELEGATE LIST

JOIN 65+ ORGANIZATIONS INVESTED IN CLEAN SPORT.

REFERRAL *Bonus*

TELL YOUR FRIENDS ABOUT #PCC2019, GET A DISCOUNT

We know how valuable the PCC Conference can be for clean sport stakeholders (in 2017, 100% of attendees said they would recommend the event to a friend or colleague). That's why we're offering an incentive for #PCC2019 delegates to refer their friends to attend. Simply tell your contacts to enter your name in the "Were you referred by anyone?" field and you're eligible for a reduced or free conference fee.*

3 Referrals:
1/2 Price Registration

5 Referrals:
Free Registration!

*Already facilitated 3 or 5 registrations? Reach out. We are happy to retroactively honor the discount.

TRAVEL *Grants*

NEED FINANCIAL SUPPORT TO GET TO #PCC2019?

The PCC Conference offers early career researchers an unprecedented opportunity to establish international collaborations, gain knowledge of global research activities and participate in the work of the PCC.
Travel grants provide up to $1,500 USD towards the cost of travel, registration, and accommodations for the PCC Conference.

To apply send the following to jcelmer@cleancompetition.org

1. A letter of intent identifying your interest and experience in anti-doping, and why you want to attend #PCC2019.
2. A brief CV and publication list.

GRANT DEADLINE

Pre-Applications Due Nov. 1, 2018

The PCC Scientific Advisory Board recommended more than **$2.4M USD** in research funding during 2017 cycles. Researchers from **eight** countries were funded.

Future Cycles: March/April 2019 and July/August 2019.
Micro-Grants Accepted Year-Round.

WELCOME

TO OUR NEWEST SPONSOR

CDT

Comprehensive Drug Testing

We are proud to announce that in line with CDT's enduring efforts to stay at the cutting edge of collection technology, they've formalized their relationship with the PCC. We thank CDT for their unwavering commitment to clean sport.

PCC MEMBERS ARE THE LIFEBLOOD OF OUR ORGANIZATION

Larry D. Bowers Award for Excellence in Anti-Doping Science

Presented by the U.S. Anti-Doping Agency

To recognize and award the achievements of scientists who have made an impact on anti-doping approaches and best practices, USADA is pleased to present the Larry D. Bowers Award for Excellence in Anti-Doping Science.

What documents are required for a nomination?

- ✔ Letter of nomination.
- ✔ Nominee's current curriculum vitae.
- ✔ Nominee's five most important peer-reviewed contributions to anti-doping science.
- ✔ Three references who can comment on the quality of the nominee's scientific work.

Nomination submissions for the 2019 award are due by

March 1, 2019

Learn more about the nomination process:

www.USADA.org/excellence-anti-doping-science-award

ANTI-DOPING OPPORTUNITY

The University of Lausanne, via the Center of Research and Expertise in Anti-Doping Sciences (REDs) is offering a Certificate of Advanced Studies (CAS) in anti-doping.

ORGANIZATIONAL, SCIENTIFIC, ETHICAL, SOCIOLOGICAL, AND LEGAL INSIGHT

Travel Grant

The PCC will provide one attendee up to **$1,500 USD** towards the cost of travel, registration, and accommodations.

Email Jcelmer@cleancompetition.org for application details.

March 2019 & March 2020

(Two Week Modules)

Register by Nov. 30, 2018

https://www.unil.ch/ssp/cas/anti-doping

UPCOMING *Dates*

PARTNERSHIP FOR clean competition	Nov. 1, 2018	**2018 ROUND THREE PRE-APPLICATIONS DUE**
PARTNERSHIP FOR clean competition	Dec. 1, 2018	**2018 ROUND THREE FULL APPLICATIONS DUE**
ISENC18	Dec.18-20, 2018	**INT'L SPORT + EXERCISE NUTRITION CONFERENCE**
Deutsche Sporthochschule Köln German Sport University Cologne	Feb. 17-22 2019	**MANFRED DONIKE WORKSHOP**
PARTNERSHIP FOR clean competition	Mar. 1, 2019	**2019 ROUND ONE PRE-APPLICATIONS DUE**
Unil UNIL | Université de Lausanne	Mar. 18-29, 2019	**(CAS) - ANTI-DOPING FOR SPORT**
PARTNERSHIP FOR clean competition	Apr. 16-18, 2019	**#PCC2019**

GET IN TOUCH:

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jcelmer@cleancompetition.org

CleanCompetition.org

/PCCantidoping

ISENC18 INTERNATIONAL SPORT + EXERCISE NUTRITION CONFERENCE 2018

Limited places still available

Please make your registration to secure your place.

CONFERENCE THEME

The conference programme has dual Performance: Exercise & Health themes.

The world's leading experts will give their insights into the effects of diet and exercise on health and performance.

Leading international speakers will present the latest evidence and encourage discussion and interaction.

WHO SHOULD ATTEND

The Conference is a high-level educational event, endorsed by BDA, SENr and AfN, for sports nutritionists, personal trainers and any professional interested in sports nutrition.

Delegates will gain greater knowledge and receive comprehensive tips, advice and practical help from leading global experts.

REGISTER NOW

YOUNG INVESTIGATOR AWARDS – see website for details