

CURRICULUM VITAE

MARTIAL SAUGY

1. Personal information

Name : Saugy
First name : Martial
Born : 28.12.54 in Payerne (Switzerland)
Nationality: Swiss
Languages: French (mother tongue), English, German
Area of specialization: Sports Biology, Analytical chemistry, Antidoping sciences
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2. Education

1979 : Licence in Biology, University of Lausanne
1981 : Degree in Science Pedagogy
1986 : PhD in Plant Physiology and Phyto-Chemistry, University of Lausanne
1986-1987 : Post-doctoral fellowship in Biochemistry, McGill University in Montreal, Canada

3. Professional experience

Current position:

Scientific advisor in antidoping sciences to the Center of Research & Expertise in antidoping Sciences (Reds) of the Lausanne University (Switzerland)

Past positions:

2016-2020: Associate Professor, Director of the Center of Research & Expertise in antidoping Sciences (Reds) Institute of Sports Sciences of the Lausanne University (ISSUL) University of Lausanne (Switzerland)

2013-2016: Associate Professor at Faculty of Biology and Medicine of the University of Lausanne

2006-2013: Privat-Docent at Faculty of Biology and Medicine of the University of Lausanne

2002-2016: Director of the Swiss Laboratory for Doping Analyses, CHUV, Lausanne

1990-2001: Deputy Scientific Director, Swiss Laboratory for Doping Analyses, CHUV, Lausanne

1988-1989: Biochemist, Laboratory of Analytical Toxicology, Legal Medicine Institute, CHUV & University of Lausanne

1986-1987: Research associate in biochemistry, McGill University, Montreal, Canada

4. Approved research projects:

- From biological measurements to decision making in community health (subside FNRS 320000-111771). (2006-2007)
- Testosterone metabolism in different ethnical populations: towards a better evaluation of steroid profiling. (subside FIFA F-MARC; CHF 150'000.-) (2006)

- Quantification of 19 NA and 19 NE conjugates in plasma and urine samples by LC/MS/MS (subside WADA 06C24CS; \$ 161'500.-) (2007)
- Development of a web-based tool for the forensic evaluation of any longitudinal marker of doping: The athlete passport. (subside WADA \$77'200.-) (2007)
- A forensic approach to the fight against doping (subside WADA \$ 513'6000.-) (2007-2009)
- Extraction and cleanup procedures for EPO detection (subside BASPO CHF 75'000.-) (2007)
- Small dosage of testosterone and nandrolone: use of IRMS for the detection (Subside BASPO CHF 135'000.-) (2007)
- Statistical method of evaluation the normality or abnormality of biological parameters in athlete's blood or urine (subside WADA \$ 125'000.-) (2007)
- Analysis of CERA and other ESAs in urine (subside BASPO CHF 127'000.-) (2008)
- Development of a novel method for the detection of HGH doping in elite sport. (Subside BASPO CHF 163'000.-) (2009)
- Stimulation of testosterone production by administration of HCG: effect on the steroid/IRMS profile and HCG level in urine. (Subside FIFA F-MARC; CHF 150'000.-)(2010)
- Comparison between blood and urine matrixes in the fight against doping (subside Antidoping Suisse CHF 204'000.-) (2010)
- Suitability of in competition testing in blood compared to urine matrix. (subside WADA \$ 100'000.-) (2011)
- The endocrine module of the athlete passport in athletics. Collaborative project with WADA (subside IAAF \$158'000.-) (2011)
- Pilot study for establishment of the endocrine module of the athlete passport (subside WADA 336'000.-) (2011-2012)
- Serum steroid profile by LC/MS/MS for world Championship in athletics (subside WADA \$280'000.-) (2013-2014)
- Serum steroid profile by LC/MS/MS for world Championship in athletics. Collaborative project with WADA (subside IAAF \$170'000.-) (2013-2014)
- Detection of DEHP-free blood transfusion using a combination of different biomarkers in different matrixes (subside WADA \$ 120'000.-) (2014)
- Detection of prohibited substances by supercritical fluid chromatography (subside WADA \$102'000.-) (2015)
- Impact of iron injection on iron metabolism biomarkers to detect blood transfusion (subside WADA \$ 80'000.-) (2016).
- Detection of testosterone doping by female athletes (subside WADA, \$100'000.-) (2017)

5. PhD thesis supervision:

2003: **John Andrew Neil Robinson, PhD, UNIL:** Blood manipulations in endurance sport.

2006: **Norbert Baume, PhD, UNIL:** endogenous production of nortestosterone by human and influence of physical activity and nutritional regime (Transl. from French)

2009: **Séverine Lamon, PhD, UNIL:** Atypical EPO profiles in antidoping analyses

2010: **Emmanuel Strahm, PhD, UNIGE + UNIL:** Study of androgen metabolism and implication in the fight against doping (Transl. from French)

2011: **Flavia Badoud, PhD, UNIGE + UNIL:** Application of ultra-performance liquid chromatography coupled with time of flight mass spectrometry for antidoping analyses.

2014: **François Marclay, PhD:** Perspectives for Forensic Intelligence in Anti-Doping and the emergence of smokeless tobacco consumption in sport

2019: **Federico Ponzetto, PhD:** New strategies for the longitudinal monitoring of biological markers indicative of doping practices.

2021: **Olivier Salamin, PhD:** Investigation of blood biomarkers for the improvement of the Athlete Biological Passport.

6. Teaching activities

Courses on doping in sport in several faculties of UNIL, EPFL, UNINE and UNIZ.

7. Memberships of panels, boards.

Since 2002: Scientific Advisor in Antidoping for FIFA Medical Commission

2008-2012: Member of the List expert group at WADA

2014-2015: Member of the Laboratory Expert Group at WADA

Since 2014: Member of the Passport expert Group at WADA

Since 2004: Member of the Antidoping task force of UEFA

2007-2016: Member of Medical and Anti-Doping commission of IAAF

Member of expert panels in antidoping for the following international competitions:

Olympic Games: Sydney 2000, Torino 2006, Vancouver 2010, Sochi 2014, Rio 2016.

FIFA World Cup: 2002 Japan-Korea, Tokyo.

UEFA EURO: 2004 Portugal- Lisbona, 2012 Poland-Ukraine-Warsaw, 2016 France- Paris.

IAAF WC 2005 Helsinki, 2007 Osaka, 2009 Berlin, 2011 Daegu, 2013 Moscow, 2015 Beijing.

10. Organization of conference:

General coordinator of the 2006 IAAF World Antidoping Symposium, Sept. 30th - Oct. 2nd 2006, Lausanne, Switzerland

11. Price, awards

Manfred Donike society Award of excellence in research (2000).

12. Major Achievements

Preamble

In 1990, the State Council of Canton de Vaud decides to create the antidoping Laboratory of Lausanne (LAD). It has been created inside the Institute of Legal Medicine. The task of MS has been then to make the technology transfer from another accredited antidoping Laboratory (The Laboratory INRS-Santé, University of Quebec in Montreal) and get the International accreditation (delivered then by the IOC medical Commission), which was obtained end of 1991. This can be described as a major technical achievement. The major scientific achievements are the following:

1. Introduction of the forensic sport's hematology in the fight against Doping.

In 1996, the fight against doping was based solely on the urinary analyses of traces of doping substances. The analytical technique to detect the major doping product used at the time, the recombinant erythropoietin (r-EPO), was not available. Doping with EPO was known to be widespread in endurance sports. MS introduced the blood matrix in the field of antidoping in order to measure biomarkers (hematocrit, hemoglobin, reticulocytes, ...) which were be influenced by the application of r-EPO. This approach was then used in several sport's disciplines like cycling, athletics and cross-country ski. This was the first implementation of indirect detection of doping based on the measurements of biomarkers.

2. Creation of the Athlete Biological Passport (APP) and implementation in top-level sport

Until 2006, the indirect markers of doping were only used for targeting purposes in order to better organize antidoping tests on individual. Population norms with threshold values of some biomarkers were used in this respect. MS team set up the project of the Athlete Biological Passport, which is based on an individual and longitudinal follow up of the athlete by using several groups of biomarkers, establishing scores or ratios included in an adaptive model (using a Bayesian approach) allowing establishing individual limits rather than population norms. This ABP is now universally recognized and its use is seen as an obligation for sports authorities to set a credible antidoping program. Two modules (hematological and steroidal) are now in place to which we contribute scientifically in a very significant way

Ref.: Sottas PE, Robinson N, Saugy M. (2010) The athlete's biological passport and indirect markers of blood doping. *Handb Exp Pharmacol.*(195):305-26. Review

3. Measurement of doping prevalence in specific populations. Epidemiology of doping

In order to act efficiently against doping in sport, one essential step is to measure the size of the phenomenon in specific groups or populations. This has been done in athletics on a longitudinal basis as well as transversally in major competitions. Our work showed that the world top level athletes are not only heterogeneous in their physiological factors, but also in their doping behavior, with contrasting attitudes between countries.

Ref: Sottas PE et al (2011) Prevalence of blood doping in samples collected from track and field athletes. *Clin Chem* 57 (5) 762-769.

Faiss et al (2020) Prevalence Estimate of Blood Doping in Elite Track and Field Athletes During Two Major International Events. *Front Physiol.* 2020 Feb 25;11:160. doi: 10.3389/fphys.2020.00160. eCollection 2020

13. Scientific publications:

More than 180 peer-reviewed publications.