Arbitrations CAS 2016/A/4803 Ekaterina Gnidenko v. International Olympic Committee (IOC) & Union Cycliste Internationale (UCI) & CAS 2016/A/4804 Maria Abakumova v. IOC & CAS 2017/A/4983 Tatyana Lebedeva v. IOC & World Anti-Doping Agency (WADA), award of 25 July 2018

Panel: Mr Alan Sullivan QC (Australia), President; Mr Romano Subiotto QC (United Kingdom); Prof. Philippe Sands QC (United Kingdom)

Cycling; Athletics
Doping (dehydrochloromethyltestosterone (DHCMT) metabolites; Turinabol (oral))
Burden of proof for anti-doping rule violation and Article 3.2.1 WADC
Version of procedural rules applicable in case of anti-doping rule violations
Principles guiding an analysis for a prohibited endogenous substance and scientific validity of such procedure
Filters for considering expert evidence

1. **Ordinarily, the relevant anti-doping organisation has the burden of establishing, to the comfortable satisfaction of the judging body, that an anti-doping rule violation has occurred; that burden includes satisfying the judging body of the scientific validity of the analytical methods adopted by the testing laboratory. However, Article 3.2.1 of the 2015 World Anti-Doping Code (WADC) reverses that burden of proof concerning the scientific validity of the analytical methods employed by the laboratories by stipulating that *"analytical methods or decision limits approved by WADA after consultation with the relevant scientific community and which have been the subject of peer review are presumed to be scientifically valid".***

2. **In line with the general rule that it is the version of procedural rules existing at the time proceedings are commenced that is applicable, the 2015 WADC applies to anti-doping proceedings commenced as of the date of their entry into force; this is irrespective of the fact that the relevant anti-doping rule violation occurred prior to the introduction of Article 3.2.1 into the 2015 WADC.**

3. **There are established principles that guide a confirmatory analysis for a prohibited endogenous substance. For the purposes of an anti-doping rule violation, a sample taken from an athlete will only be found to contain a specific prohibited substance if, when compared to a reference sample or the like of the prohibited substance in question, there is an identity or very near identity in the two samples between: (a) at least two ion transitions; (b) the abundances of the diagnostic ions; and (c) the retention times for the particular substance. Such testing method or procedure is "scientifically valid", as used in Article 3.2.1 of the 2015 WADC, even if it does not identify the correct substance 100 times out of 100, if another substance (even another prohibited substance) could possibly be the source of a positive finding for the specific prohibited substance identified, or if there is one false positive out of a million. Absolute infallibility of a**

testing procedure is not required.

4. **When considering expert evidence, the following filters shall be applied: (a) the expert's duty is not to represent the interests of the party calling him or her, but rather to express his or her views honestly and as fully as necessary for the purpose of a case; an expert should provide independent, impartial assistance to the judging body and should not be an advocate for any party; (b) the judging body cannot completely disregard any expert evidence which is otherwise admissible or before it; rather, it must pay regard to the content of the expert evidence, but it is not bound by it, or required to blindly follow it; (c) the expert opinion should be comprehensible and lead to conclusions that are rationally based, with reasoning explained; the process of inference that leads to conclusions must be stated or revealed in a way that enables conclusions to be tested and a judgment made about their reliability; (d) in order to prevent deception or mistake and to allow the possibility of effective response, there must be a demonstrable objective procedure for reaching the expert opinion so that qualified persons can either duplicate the result or criticise the means by which it was reached, drawing their own conclusions from the underlying facts; (e) the value of expert evidence depends upon the authority, experience and qualifications of the expert and, above all, upon the extent to which his or her evidence carries conviction; and (f) in cases where experts differ, the judging body will apply logic and common sense in deciding which view is to be preferred, or which parts of the evidence are to be accepted.**

I. THE PARTIES

1. These are three separate appeals, each by an individual Russian athlete and each involving the IOC. WADA has either filed submissions as amicus curiae (CAS 2016/A/4803 and CAS 2016/A/4804) or as a proper party (CAS 2017/A/4983). UCI is only a party to one of the appeals (CAS 2016/A/4803). However, the appeals involve identical, or substantially identical, issues and, in each of the appeals, the parties were represented by the same counsel and raised, with very minor exceptions (which to the extent relevant will be mentioned later in this Award), the same arguments.

2. In the circumstances, by agreement of all parties, the appeals were heard together and all the appeals are dealt with collectively in one single award, except where it is necessary to refer to the particular facts, circumstances or issues relevant only to a particular appeal.

3. Ms Ekaterina Gnidenko is a Russian female cyclist of international level. She participated in the London Olympics, 2012.

4. Ms Maria Abakumova is a Russian female athlete of international level. She competed in the women's javelin throw event at the Beijing Olympic Games in 2008.

5. Ms Tatyana Lebedeva is a former Russian female athlete of international level. She participated in the women's triple jump and long jump events at the Beijing Olympic Games in 2008.

6. The International Olympic Committee (IOC) is the supreme authority of the Olympic Movement and, in particular, the Olympic Games, with its registered seat in Lausanne, Switzerland. The IOC organises the modern Olympic Games and the Winter Olympic Games. It organised and controlled the 2008 Beijing Olympic Games and the 2012 London Olympic Games.

7. The World Anti-Doping Agency (WADA) is an independent foundation promoting, coordinating and monitoring the fight against doping in sports. WADA's key activities include scientific research, education, development of anti-doping capacities, and the monitoring of the World Anti-Doping Code (WADC). WADA also establishes and approves the standards, the rules, and guidelines in anti-doping (including the International Standard for Laboratories, International Standards for all Testing and Investigations). WADA has its seat in Lausanne, Switzerland, and its main offices in Montreal, Canada.

8. The Union Cycliste Internationale (which is only involved in CAS 2016/A/4803) (UCI) is the world governing body for cycling sports and oversees international competitive cycling events. It has its seat in Aigle, Switzerland.

II. THE FACTS

9. Set out below is the summary of the relevant facts and allegations based on the parties' written submissions, pleadings, and evidence adduced at the CAS hearing on 14 and 15 May 2018. While the Panel has considered all the facts, allegations, legal arguments, and evidence submitted by the parties in the present proceedings, it refers in its Award only to those parts of that material which it considers necessary to explain its reasoning.

(a) CAS 2016/A/4803 Gnidenko v. IOC & UCI

10. On 28 September 2016, Ms Gnidenko filed an appeal against the decision rendered by the IOC Disciplinary Commission dated 7 September 2016.

11. Ms Gnidenko competed in two events at the 2012 Olympic Games in London. On 3 August 2012, the Appellant competed in the women's cycling track keirin event in which she was placed 8th and for which she was awarded a diploma. On 5 August 2012, the Appellant also competed in the women's cycling track sprint event in which she was ranked 18th.

12. For the purposes of events at the 2012 London Olympics, the IOC had established and adopted the anti-doping rules applicable to those games (ADR 2012). ADR 2012 was, in substance, identical to the WADC in force at the time of the London Olympics.

13. On 24 July 2012, shortly prior to her participation in the London Olympics, the Appellant, while in Ratomka, Belarus, was requested to provide a urine sample for doping control purposes, as requested by the IOC, in order to conduct doping control for the athletics seeking to participate in the Games.

14. The sample so provided by the Appellant was analysed in 2012 by the WADA-accredited laboratory in Cologne, Germany, and the analysis did not return a positive finding. The remains of the Appellant's A-sample and her B-sample were kept in the Cologne laboratory for long time storage.

15. In the context resulting from revelation of widespread doping practices notably in Russia, which was confirmed by the reports of the Independent Commission chaired by Mr Dick Pound published in December 2015 and January 2016, the IOC decided to subject a number of urine samples kept in long-term storage from the London Olympic Games to re-analysis. The Appellant's urine samples, which had been kept in the Cologne laboratory, were among the samples subjected to the re-analysis. The re-analysis was carried out with the benefit of analytical methods which had improved or changed since the original analysis was carried out at the time of the London Olympics.

16. The Panel will need to explain these changes or *"improvements"* in analytical method in more detail below. However, in essence:

    (a) One of the decisive parameters with regard to the efficiency of the detection of Prohibitive Substances is the so-called *"window of detection"*, that is, the time during which the Prohibitive Substance or its metabolites remain detectable in the body.

    (b) This period can be quite short. This notably used to be the case in connection with steroids such as Oral-Turinabol (the scientific or technical name for Oral-Turinabol is dehydrochloromethyltestosterone (DHCMT)). The Panel shall refer to the Prohibited Substance as Turinabol or DHCMT interchangeably in these reasons. When used, these steroids and their metabolites would typically fall below detection levels within a few days.

    (c) However, in comparatively recent times, significant improvements in detection capabilities have been achieved, which, the IOC and WADA assert, have increased the windows of detection of certain Prohibitive Substances, and notably of steroids (including in particular, Turinabol).

    (d) It is said that these improvements are due on the one hand to analytical instruments with much higher sensitivity and selectivity, which could thus technically detect

substances or metabolites remaining present in the urine in much smaller quantities. They are also due to the identification (notably due to the more sensitive instruments) of further metabolites marking the presence of the Prohibitive Substance during much longer periods of time than was the case for the parent compound or previously identified metabolites. Those newly identified metabolites were described as *"long term metabolites"* (LTMs).

(e) In respect of Turinabol, an important article, heavily referred to through the course of this CAS hearing, was said to be the *"break through"* or the *"starting point"* for the identification of new LTMs for this substance. That article was by Dr Tim Sobelevsky and Dr Grigory Rodchenkov, entitled *"Detection and Mass Spectrometric Characterisation of Novel Long-Term Dehydrochloromethyl-testosterone Metabolites in Human Urine"*. It was published in 2012 in the Journal of Steroid Biochemistry and Molecular Biology. According to this article, these newly identified LTMs remained detectable for a much longer period and thus greatly extended the window of detection of Turinabol for up to 40-50 days or, perhaps, even more. The LTMs identified progressively from 2012 onwards as markers of the existence of DHCMT are known as the M1, M2, M3 and M4 metabolites.

(f) From 2012 onwards, the detection method based on the identification of these new LTMs was progressively validated and implemented by the WADA-accredited laboratories. In the WADA-accredited laboratories of Cologne and Lausanne, the validation occurred at the beginning of 2013 and 2014 respectively.

17. In 2016, the Cologne laboratory re-analysed the Appellant's stored urine samples, which had been kept in long-term storage at that laboratory since the London Olympics.

18. The analysis of the remains of each Appellant's A-sample and the analysis of her B-sample performed by the Cologne laboratory in 2016 returned positive for the presence of a long-term metabolite of a Prohibitive Substance, namely, Turinabol. The metabolite found was M3.

19. On the basis of this re-analysis, the IOC Disciplinary Committee found in its decision dated 7 December 2016 that the Appellant had committed an anti-doping rule violation (ADRV) pursuant to the ADR 2012 (presence and/or use of a Prohibitive Substance or its metabolites or markers in an athlete's body specimen). As a consequence, the Appellant was disqualified from the events in which she participated at the 2012 London Olympics and her diploma obtained in the cycling track keirin event was deemed withdrawn and was ordered to be returned.

20. That is the reason for this appeal. The Appellant submits she ought not to have been disqualified from the events in which she participated at the 2012 London Olympics and should not have had to suffer the withdrawal and return of her diploma.

(b) CAS 2016/A/4804 Abakumova v. IOC

21. Ms Abakumova participated in the women's javelin throw event at the 2008 Beijing Olympic Games. The IOC had established and adopted anti-doping rules applicable to the Beijing Olympics (ADR 2008). ADR 2008 was substantially identical to the WADC then in force.

22. From 19 to 21 August 2008, Ms Abakumova competed in the javelin event and was placed 2nd and was awarded the silver medal.

23. On 21 August 2008, Ms Abakumova was requested to provide a urine sample for doping control purposes, as requested by the IOC in order to conduct doping control.

24. That sample was analysed by the WADA-accredited laboratory in Beijing, China and the analysis did not return a positive finding. The remains of Ms Abakumova's A-sample and her B-sample were later transferred to the WADA-accredited laboratory in Lausanne, Switzerland for long-term storage.

25. For the same reasons as explained in respect of the Gnidenko Appeal above, in 2016, the IOC decided to perform further analysis in relation to some of the samples collected during the Beijing Games using the improved or changed analytical methods already referred to.

26. The analysis of the remains of Ms Abakumova's A-sample and the analysis of her B-sample conducted by the Lausanne laboratory in 2016 returned positive for the presence of long-term metabolites M2 and M3, said to be metabolites of a Prohibitive Substance namely Turinabol or DHCMT.

27. On the basis of the re-analysis of the samples carried out by the Lausanne laboratory in 2016, the IOC Disciplinary Committee found by decision dated 7 September 2016 that the Appellant had committed an ADRV (being the same type of ADRV as was found in respect of Ms Gnidenko – see paragraph 19 above). As a consequence, Ms Abakumova was disqualified from the events in which she participated at the 2008 Beijing Olympics, and her silver medal, a diploma she had been awarded, and the medallist pin, which had been awarded to her in respect of the javelin throw event, were deemed withdrawn and ordered to be returned.

28. Once more, this appeal is brought to overturn the consequences of the decision of the IOC Disciplinary Committee of 7 September 2016.

(c) CAS 2017/A/4983 Tatyana Lebedeva v. IOC & WADA

29. Ms Lebedeva is now retired. She competed for Russia at the 2008 Beijing Olympics in the women's long jump and triple jump events.

30. She competed in the women's triple jump event from 15 to 17 August 2008 and finished 2nd and was thus awarded the silver medal.

31. She competed in the women's long jump event between 19 and 22 August 2008, in which she also finished 2nd and was also awarded the silver medal.

32. On 18 August 2008, after the triple jump event, Ms Lebedeva was requested to provide a urine sample for doping control purposes. On 22 August 2008, at the completion of the long jump event, Ms Lebedeva was also requested to provide another urine sample.

33. Both samples were analysed by the WADA-accredited laboratory in Beijing, China at the time and did not return positive findings. The remains of Ms Lebedeva's A-samples and her B-samples were later transferred to the WADA-accredited laboratory in Lausanne, Switzerland for long-term storage.

34. For the same reasons as in respect of the other two appeals heard concurrently with this one, the IOC decided in 2016 to perform further analysis in relation to some samples collected as a result of the 2008 Beijing Olympic Games including those samples of the Appellant held in long-term storage in the Lausanne laboratory.

35. In fact, in accordance with policy, only the first of the samples collected from Ms Lebedeva in Beijing in 2008 was re-analysed. That re-analysis detected the presence of the long-term metabolites M2 and M3 in the sample, allegedly being metabolites of a Prohibitive Substance, Turinabol.

36. As a consequence of these findings, there was a hearing by the IOC Disciplinary Committee and in its decision dated 25 January 2017, Ms Lebedeva was found to have committed an ADRV, being the same type of ADRV as each of the other two Appellants were found to have committed (namely the presence and/or use of a Prohibitive Substance or metabolites or markers in an athlete's body specimen).

37. As a consequence, the IOC Disciplinary Committee disqualified the Appellant from the events in which she participated at the 2008 Beijing Olympics, and her two silver medals, her diplomas, the medallist pins obtained in the triple jump and long jump events, respectively, were deemed to be withdrawn and were ordered to be returned.

38. It is from those findings and rulings of the IOC Disciplinary Committee that this appeal is brought.

III. PROCEEDINGS BEFORE THE COURT OF ARBITRATION FOR SPORT

39. Ms Gnidenko filed her Statement of Appeal with the CAS Office on 28 September 2016. Ms Abakumova filed her Statement of Appeal on the same day. Ms Lebedeva filed her Statement of Appeal on 14 February 2017. Pursuant to Article R48 of the Code of Sports-related Arbitration (Code), each of the athletes designated Mr Philippe Sands QC as an Arbitrator in her appeal.

40. Ms Gnidenko filed her Appeal Brief on 10 November 2016. On the same day, Ms Abakumova also filed her Appeal Brief. Ms Lebedeva did not file a separate Appeal Brief but her Statement of Appeal is a more extensive document than that which appears in the other two appeals and expressly attaches a detailed list of exhibits to be relied upon by her in the appeal.

41. Pursuant to Article R55 of the Code, the IOC filed separate Answers to each of the Statements of Appeal/Appeal Briefs on 24 February 2017. The IOC nominated Mr Romano Subiotto QC as an arbitrator in each of the appeals.

42. In respect of the appeals by Ms Gnidenko and Ms Abakumova, CAS notified the parties that the Panel to hear those appeals would comprise Mr Alan Sullivan QC as President and Mr Sands QC and Mr Subiotto QC as arbitrators. Ms Lebedeva lodged her Statement of Appeal after the Panel had been formed in respect of the other two appeals, but, given the near identity of issues, the parties sensibly agreed in February 2017 that the same Panel hear her appeal as well.

43. Because of the number of parties involved, disputes as to the exact role WADA was or should play in the proceedings, extensions of time needed because of new scientific material coming to light, and problems of availability of witnesses or the like, a significant period of time elapsed between the filing of the Answers to the Appeal Brief in February 2017 and the hearing of these appeals in Lausanne on 14 and 15 May 2018. The Panel does not propose, in what follows, to catalogue each and every individual step in the process leading up to the hearing, but rather only to refer to the more significant matters.

44. On 15 December 2016, in respect of the Gnidenko and Abakumova appeals, the CAS Court Office wrote to the parties informing them that as WADA had not been formally named as Respondent by the Appellants in either of those appeals, as the Respondent had not requested that WADA be joined as a party, and as WADA had not requested to intervene as a party, the Panel had decided that WADA should be entitled to file an *amicus curiae* brief in those appeals.

45. On 26 January 2017, WADA presented its report dated 25 January 2017 entitled *"WADA report on oral Turinabol analysis in anti-doping laboratories"*, which was said to address *"the issue of the scientific validity of the analytical method to establish the presence of long-term metabolites of dehydrochloromethyltestosterone that is applied by WADA-accredited laboratories"*.

46. By letter dated 1 February 2017, counsel for Ms Gnidenko and Ms Abakumova, wrote to the CAS Court Office confirming that those Appellants agreed *"that the scientific validity and reliability of the method used by Cologne and Lausanne anti-doping laboratories to detect the 'long-term' metabolites of the prohibited substance (oral Turinabol, or Turinabol) were the core issues of their appeals"*. In the same letter, counsel for Ms Gnidenko and Ms Abakumova noted the fact that the WADA report did not indicate who was its author.

47. Shortly after this, as already noted, Ms Lebedeva lodged her Statement of Appeal, and it was agreed on or about 20 February 2017 that that appeal should also be assigned to the Panel hearing the appeals of Ms Gnidenko and Ms Abukamova.

48. On 24 February 2017, the IOC filed its Answers in respect of each of the Appeals. With minor exceptions or additions, each of the Answers was identical.

49. On 6 March 2017, WADA informed CAS, in Ms Lebedeva's Appeal, that it adopted the position of the IOC set out in its Answer to that Appeal, whilst it maintained that there was no basis to include it as a Respondent in that Appeal.

50. By a fax message dated 17 March 2017, UCI informed CAS, in respect of Ms Gnidenko's Appeal, in which UCI had intervened and sought to be made a party, that UCI fully supported the position of the IOC and WADA with respect to the occurrence of the anti-doping rule violation, as well as the arguments presented to rebut the Appellant's expert opinion. It asked for its letter to be taken as its Answer.

51. On 24 March 2017, counsel of each of the Appellants wrote to the CAS Court Office. In his letter, counsel for the Appellants noted:

> *"As it was indeed tacitly agreed by the parties, the central issue of all three proceedings is of a scientific nature – is the method developed by the laboratories on the basis of* Rodchenkov et al *publication and later validated by WADA scientifically valid and reliable?"*.

52. On 1 June 2017, counsel for the Appellants agreed to an Order of Procedure in respect of each of the Appeals. Save for one exception by WADA, each of the other parties to the respective Appeals agreed with that Order of Procedure in its entirety. For its part, WADA altered the "Jurisdiction" section of the Order of Procedure by deleting the agreement that the *"Jurisdiction of CAS is not contested by … WADA"* and altered that to read as follows:

> *"WADA recalls the terms of its letters dated 23 February 2017 and 6 March 2017 pursuant to which WADA submitted that there was no basis for adding it as a respondent to appeal CAS 2017/A/4983 and, in any event, it lacked standing to be sued"*.

53. Subject to that matter, however, the parties agreed to the Order of Procedure to govern the preparation and hearing of the Appeals. For present purposes, pursuant to the Order of Procedure the parties agreed:

(a) That the jurisdiction of CAS was not contested by any of the parties (subject to the caveat expressed by WADA and quoted above);

(b) The composition of the Panel;

(c) That the Seat of the arbitration was Lausanne, Switzerland;

(d) That the language of the arbitration was to be English;

(e) That the law applicable to the merits of the case would be the law of the country in which the federation, association or sports-related body which issued the Appealed Decisions reside;

(f) That the hearing of the matter would be on 6 September 2017 at CAS headquarters, Lausanne, Switzerland;

(g) That unless all parties agreed to the contrary, the Award of the Panel would be made public.

54. On 26 July 2017, WADA wrote to inform CAS that there had been a recent *"major development"* with respect to one significant element of WADA's expert report filed on 27 January 2017. That major development was explained as follows:

"The element at stake is addressed on page 15 of the report … and relates to Dr Kopylov's argument in relation with the absence of a synthetic standard confirming the proposed chemical structures.

As the report mentions, a research project aiming at synthesising of the "M3" metabolite of DHCMT was ongoing at the time that the report was submitted.

We are pleased to report that this project research, which was conducted by a University Research team in collaboration with a WADA accredited laboratory, has now been successfully completed. A synthetic standard of M3 was produced. This is an additional and final confirmation of the validity of the M3-metabolite identified in the peer-review publication of Drs Sobolevsky and Rodchenkov as a DHCMT long-term metabolite.

…

As part of this validation process, the laboratories notably confirmed that the synthetic reference material was identical to the positive reference material that they had been using since they began to search for M3 and therefore fit for the purpose of the analysis of this substance and detection of this metabolite of DHCMT".

55. WADA's letter invited the Appellants to reconsider their position on the Appeals in the light of this new *"major development"*. By email dated 28 July 2017 to the CAS Court Office, the IOC adopted a similar position to that of WADA.

56. By letter dated 2 August 2017, counsel for the Appellants wrote to CAS indicating that the Appellants did not presently agree to WADA relying on the new evidence of this *"major development"*, but that if such evidence was admitted, the Appellants would wish to put on further evidence in response and supported an adjournment of the hearing until a later date. The Appellants emphasised the need for an adjournment in Mr Greene's letter to Mr Sternheimer dated 8 August 2017, asserting that there would be a denial of procedural fairness if such an adjournment was not permitted.

57. The Panel ruled unanimously that WADA (and, derivatively, the IOC) should be entitled to file the further evidence and that it was necessary to adjourn the hearing set down to 6 September 2017 to accord procedural fairness to all parties. By email dated 21 August 2017, the CAS Court Office wrote to the parties informing them of the Panel's decision and imposing a new timetable for the filing and serving of evidence by the parties.

58. Subsequently, the Appellants sought an extension of time to file a response to the new WADA material, which was opposed by the other parties. However, by email dated 30 October 2017, the CAS Court Office, on behalf of the Panel, informed the parties that the Appellants' request for an extension of time for filing of evidence until 27 November 2017 had been granted.

59. On 27 November 2017, the Appellants submitted what they termed as four new expert reports analysing WADA's new evidence. WADA in turn then sought time to file a detailed response to the further evidence of the Appellants, and suggested 16 February 2018 as the appropriate time for their response. The Appellants did not dispute WADA's entitlement to time to file a response, but suggested an earlier time than 16 February 2018. Ultimately, the parties agreed that WADA have until 1 March 2018 to file its response, and an order to that effect was made by consent by the Panel.

60. After further consultation with the parties, the Panel set the three appeals down for hearing at the CAS Court Office in Lausanne, Switzerland on 14 and 15 May 2018.

61. The hearing of these appeals duly took place in Lausanne on 14 and 15 May 2018. The following persons attending the hearing:

> For the Appellants: Ms Ekaterina Gnidenko, Ms Tatyana Lebedeva, Ms Maria Abakumova (by Skype), Mr Artem Patsev (counsel), Mr Paul Greene (counsel), Dr Arthur Kopylov (expert, by Skype), Dr Hilly Yang (expert), Prof. Dr. Mats Larsson (expert), and Ms Alexandra Volkova (interpreter).

For the IOC: Mr Christian Thill (senior legal counsel), Mr Jean-Pierre Morand (counsel), Prof. Christiane Ayott (expert, also for WADA).

For WADA: Mr Ross Wenzel (counsel), Prof. Peter Gaertner (expert), Dr Osquel Barroso (expert), Dr Gunter Gmeiner (expert), Dr Tiia Kuuranne (expert).

For the UCI: Ms Brianna Quinn (counsel).

62. At the conclusion of the hearing, all parties acknowledged that they had no objection in respect of the conduct of the proceedings and confirmed that their right to be heard had been respected. The Panel indicated that it would reserve its decision.

IV. SUBMISSIONS OF THE PARTIES AND PRAYERS FOR RELIEF

A. The Appellants' Submissions and Prayers for Relief

63. Initially, the Appellants challenged the scientific validity of the analytical methods applied by the Cologne and Lausanne laboratories to establish the presence of the long-term metabolites of Turinabol in the Appellants' stored samples. They relied upon an opinion of Dr Arthur Kopylov of the Institute of Biomedical Chemistry of the Russian Academy of Medical Sciences dated 18 July 2016. In that opinion, Dr Kopylov asserted that the detection method used by the WADA laboratories for the detection of the M2, M3 and M4 metabolites was based *"exactly"* on a scientific manuscript produced by Dr Tim Sobolevky and Dr Grigory Rodchenkov entitled *"Detection and Mass Spectrometric Characterisation of Novel Long-Term Dehydrochloromethyltestosterone Metabolites in Human Urine"* published in the Journal of Steroid Biochemistry and Molecular Biology 2012.

64. The Appellants asserted that the scientific correctness of the conclusions made in the published manuscript, and therefore, the scientific validity of the method applied by the Lausanne and Cologne laboratories, were highly speculative and could not confirm the presence of Turinabol metabolites in urine samples. According to Dr Kopylov's opinion, the main challenges of the method employed by the laboratories based on the Sobolevky and Rodchenkov's manuscript were:

(a) No negative controls confirming the absence of interference and side-effect from matrix and other substances;

(b) No post-administration assay, confirming that the proposed structures derived from Turinabol;

(c) No synthetic standards that could confirm proposed structures and the spectra;

(d) Baseless conclusion of detection window for the novel metabolites, because post-administrative assay had not been conducted;

(e) Huge discrepancies between presented data and its interpretation, and some wrong conclusions that seem to be intentionally made by the authors;

(f) Inconsistency of the proposed structure with those found and validated by authors already after publication of the presented method;

(g) No confirmation of the proposed structures by alternative approaches which regularly should be (and are) provided in the case of discovery of a new substance.

65. According to Dr Kopylov, the *"deficiencies"* led to the conclusion that the method could not be applied in its current state, meaning that the results obtained could not be absolutely credible, requiring careful revision by the wider scientific community.

66. On 27 November 2017, counsel for the Appellants confirmed to CAS that:

"This case is about the scientific reliability of the testing methodology initially theorised in 2012 to detect the long-term metabolites of Turinabol …".

67. Such letter went on to make a further or additional submission on behalf of the Appellants, said to be supported by further expert evidence to be called by the Appellants, that WADA's testing methodology for the M3 metabolite was not scientifically reliable since the test did not properly account for *"false positives"*. Two (and only two) *"imposters"* were identified by the Appellants which could lead to such false positive results. As stated in the report, filed on behalf of the Appellants, of Dr Zarbl of 25 November 2017:

"The first potential imposter is chlorinated cholesterol. Although WADA has indicated that the presence of a chlorine molecule is indicative of a chemically synthesised compound or drug, accumulating evidence indicates that the combination of endogenous chemicals and proteins can occur in mammalian cells".

68. Dr Zarbl's report goes onto reveal the alleged second *"imposter"* as another chlorinated compound, monochlorodehydroabietic acid (MCDHAA). According to Dr Zarbl, chlorination of this compound, which was allegedly a major environmental contaminant, occurs during the bleaching of wood pulp to produce white paper. Chlorination of this compound, it was said, was also possible if its parent compound, dehydroabietic acid (DHAA), is chlorinated which may also occur in *in vivo*.

69. Dr Zarbl opined that it was reasonable to assume that, depending on the source of drinking water and the prevailing regulations, human exposure to abietic acid, DHAA and MCDHAA, could occur via environmental exposure. That exposure could be increased by consumption of fish caught in contaminated waters. Based on those findings, according to Dr Zarbl, it would

be reasonable to assume that humans could be exposed to MCDHAA, which, he says, is a potential imposter for Turinabol in the WADA test, via multiple environmental sources. Dr Zarbl added that exposure to abietic acid, DHAA, and their derivatives can also occur via numerous consumer products. These compounds, he asserted, were present in packaging material in contact with food products, cooking paper and even in coffee filters.

70. At the hearing, counsel for the Appellants maintained all of these submissions, although it is fair to say that they, and the experts called by the Appellants, spent the greater amount of their time making submissions or giving evidence (as the case may be) upon the *"false positive"* aspect of the case. Counsel for the Appellants submitted that, in order for the testing procedures to be regarded as *"scientifically valid"*, the Panel had to be satisfied that, 100 times out of 100 tests, the methodology would identify the correct substance. According to counsel for the Appellants, if there was even a possibility one time in a hundred that the test procedures would indicate the presence of a metabolite of Turinabol when in fact the identified substance might be a *"false positive"* (even if only a false positive for another Prohibitive Substance), then the testing procedure cannot be regarded as being scientifically valid and, on that basis alone, it was submitted that the appeals must be allowed.

71. The Appellants' prayers for relief are as follows:

(a) That their respective appeals are admissible;

(b) That their respective appeals be upheld;

(c) That the decision rendered by the IOC Disciplinary Commission on 7 September 2016 regarding Ms Ekaterina Gnidenko is set aside;

(d) That the decision rendered by the IOC Disciplinary Commission on 7 September 2016 regarding Ms Maria Abakumova is set aside;

(e) That the decision rendered by the IOC Disciplinary Commission on 25 January 2017 regarding Ms Tatyana Lebedeva be set aside;

(f) That each of the Appellants be granted an award for her legal costs and other expenses pertaining to these Appeal Proceedings before CAS;

(g) That the IOC bear the costs of the respective arbitrations.

B. The Respondents' Submissions

72. WADA and the IOC made broadly identical submissions. For its part, UCI made no submissions as to the substantial issues in the proceedings.

73. In its report dated 26 January 2017, WADA strongly disputed and rejected each of the initial arguments raised by the Appellants. It and the IOC maintained this stance during the oral hearing.

74. In essence, the Respondents:

(a) Asserted that the two structures proposed by Dr Kopylov for particular ions to discredit the structures identified in the Sobolevky and Rodchenkov manuscript were wrong because of *"basic mistakes"* made by Dr Kopylov in his calculations and analysis. These mistakes were ultimately conceded by the Appellants;

(b) In respect of Dr Kopylov's criticism that the detection method employed had no negative controls, which would confirm the absence of interference from other substances and the lack of matrix effects, WADA and the IOC say that such a submission is incorrect. In the first place, they point out that the publication of Doctors Sobolevky and Rodchenkov did not describe the complete validation steps of the method, but, rather, only the evidence that supports the structures proposed for the long-term metabolites of DHCMT. Secondly, the Respondents pointed to Panel D of Figure 5 of the Sobolevky and Rodchenkov manuscript, which, they assert, clearly show ion traces of a negative control urine. Thirdly, the Respondents pointed to the fact that Doctors Sobolevky and Rodchenkov reported the analysis of 133 samples from sports with high risks of doping, noting that only 20 of them produced positive findings for DHCMT. By a process of deduction, the Respondents assert that the remaining 113 samples were negative for DHCMT. Finally, in this connection, as the evidence ultimately established, the Respondents pointed out that all WADA-accredited laboratories include negative control samples in the initial testing and confirmation procedures, and that the absence of signals in these negative control samples forms part of the documentation packages that are submitted for review;

(c) In respect of the criticism that there was no post-administration assay, the Respondents submitted that this claim was also incorrect. They pointed out that Doctors Sobolevky and Rodchenkov analysed 27 DHCMT excretion urines and 7 real DHCMT-positive doping control samples (said to have been found to contain other *"classical"* metabolites of DHCMT). Additionally, the Respondents submitted that WADA-accredited laboratories had reported adverse analytical findings ("AAFs") for the presence of LTMs of DHCMT and had to employ excretion studies traceable to DHCMT (pool of urine collected following the administration of DHCMT) in order to meet the identification criteria. They submitted that this kind of data forms part of the method validation studies performed by the WADA accredited laboratories in Cologne and Lausanne for the inclusion of these LMTs into their procedures for detection of DHCMT and the analysis of such reference samples is included in the documentation packages produced in support of these AAFs;

(d) In respect of the criticism that no synthetic standards could affirm the proposed chemical structure and the spectra, WADA's initial submission was to accept the absence of such synthetic standards, but to indicate that WADA was supporting research projects aimed at synthesising the M3 metabolite in order to provide reference materials to laboratories, notably to those which do not have reference urine collections. It indicated in its January 2017 report that the project had not been completed yet.

Upon completion of this project, WADA sought in July 2017 to introduce fresh evidence of the production of a new synthetic standard (see paragraph 54 above). In short, by July 2017, a synthetic standard of M3 had been produced. WADA and the IOC submitted that this was *"additional and final confirmation of the validity of the M3 metabolite identified in the publication of Doctors Sobolevky and Rodchenkov"*.

(e) In respect of the criticism that, because post-administrative assays had not been conducted, the detection window for the novel metabolites of DHCMT was baseless, WADA/IOC submitted that Doctors Sobolevky and Rodchenkov were simply offering an estimated window of detection based upon relative abundances of other metabolites at the time of publication of the study and that that estimated window was never intended to be precise nor did it need to be for anti-doping purposes. The Respondents submitted that establishing the period (window) of detection of a metabolite of a compound which is prohibited at all times is not an element associated with its identification as a marker of administration of the parent prohibited substance, but is rather associated with the regimen of administration and the sensitivity of the method used for its detection. The Respondents submitted that considering the important inter-individual differences, plus the lack of quality control of the black-market material that is the sole source of DHCMT, it was not possible and will never be possible to estimate precisely from a urine sample collected at one point of time the amount taken, the mode of administration and its timing. Finally, in respect of this issue, the Respondents noted that the allegation that no post-administrative assays had been conducted was incorrect. As already stated, the Respondents asserted that DHCMT administration samples were used by Doctors Sobolevky and Rodchenkov and by the laboratories as part of their method validation;

(f) The Respondents also disputed the assertion that there were huge discrepancies between presented data and its interpretation. They pointed out that there was no concrete evidence provided in Dr Kopylov's article to support the conclusion that there would have been huge discrepancies between the data presented and its interpretation. They submitted that that no research study contradicting Doctors Sobolevky and Rodchenkov's results or disputing their conclusions had been published since 2012;

(g) In respect of an alleged inconsistency between the proposed structures with those found and validated by the authors after the publication in 2012 of the presented method, the

Respondents submitted that again this submission is without foundation. They submitted that Dr Kopylov misinterpreted the fragmentation described by Doctors Sobolevky and Rodchenkov;

(h) The Respondents also rejected Dr Kopylov's criticism that there was no confirmation of the proposed chemical structures by alternative approaches. The Respondents recognised that full characterisation of the chemical structure may not be possible until the reference material of the right stereo chemistry is available, but said that this did not diminish the fact that the metabolites identified were DHCMT metabolites, as established through the analysis of negative samples (including pre-administration urine samples from excretion/ metabolism studies) and reference correction urines (in addition to real DHCMT-positive doping control samples). The Respondents rejected the alternatives proposed by Dr Kopylov such as use of *in-vitro* models as having less validity than administration studies in humans. They pointed out that *in-vitro* experiments are limited in their capabilities to mimic the full metabolic processes in humans as a selection of enzymes, addition of co-factors, competing substrates etc. can influence the metabolites produced. They submitted that the alleged contradiction between the publication of Doctors Sobolevky and Rodchenkov and a subsequent publication in respect of the results of an *in-vitro* study did not exist because, for the reasons just summarised, it was not surprising that the metabolites reported by Doctors Sobolevky and Rodchenkov were not identified in the context of an *in-vitro* study;

(i) Generally, the Respondents submitted that the detection and identification of long term metabolites of DHCMT had now been implemented in routine doping control analysis for five years, and close to half a million samples have been analysed in routine testing or re-testing. They submitted that Dr Kopylov's comments and criticisms were not supported by facts or objective scientific reasoning and interpretation data.

75. Further, as indicated above, in July 2017, WADA produced an additional report relating to the production of a synthetic standard of M3. Although the Appellants sought and were granted time to file a response to the additional material relating to the production of the synthetic standard, the material, which was put on by the Appellants in response to the production of the synthetic standard, did not, in fact, challenge the efficacy of the procedure used to produce the synthetic standard. Nor did the Appellants ultimately challenge the reliability of the synthetic standard. Rather, as will be explained in more detail below, the evidence which the Appellants put on in response to the WADA report on the production of the synthetic standard focused on another issue, namely the possibility of *"false positives"* being produced by the analytical methods utilised by the Cologne and Lausanne laboratories.

76. In respect of the *"false positive"* issue, the Respondents relied upon a report by Professor Ayotte dated 28 February 2018. Professor Ayotte and others also gave oral evidence at the hearing

clarifying and developing the matters raised in Professor Ayotte's report of 28 February 2018. In essence, the Respondents submitted in respect of the *"false positive"* issue:

(a) That the case put forward by the Appellants is only a theoretical exercise as to what substances, which could produce a false positive, might exist, as opposed to an exercise identifying actual substances in circulation or in the environment, which would produce the false positive. Professor Ayotte's report, amplified by her oral evidence, contains detailed criticism of the theoretical exercise engaged in by the Appellants' experts which, to the extent necessary, will be referred to below. It is not necessary, however, to set out those detailed matters at this stage. Rather, it is sufficient for present purposes to quote the conclusion of Professor Ayotte's report which, relevantly, is as follows:

> *"Then, in response to undisputable scientific evidence, the [Appellants'] experts came back with a theoretical experiment, using their own prediction model to generate virtual data based upon which they have purportedly identified 'common compounds' supposed to 'have nearly identical mass spectrum' as DHCMT metabolite M3. Their unanimous conclusion was that these compounds could produce false positive results for metabolite M3.*
>
> *However, not only did they not consider all the criteria that must be applied to get an identification (exact retention time and all ion-transitions in matching relative abundances with the reference compounds), but the compound selected does not seem to exist and their predicted fragments would be either absent or barely detectable. The real spectrum of chlorodehydroabietic acids were shown not to correspond to their theoretical creation and not to interfere with DHCMT detection".*

77. The Respondents' prayers for relief are as follows:

(a) That the appeals be dismissed.

(b) That the Respondents be granted an award of costs.

VI. JURISDICTION

78. Article R47 of the Code provides as follows:

> *"An appeal against a decision of a federation, association or sports related body may be filed with CAS if the statutes or regulations of the said body so provide or if the parties have concluded a specific arbitration agreement and if the Appellant has exhausted the legal remedies available to him prior to the appeal, in accordance with the Statutes or regulations of that body".*

79. As noted in paragraphs 52 and 53 above, the jurisdiction of CAS was not contested by any of the parties subject to the caveat expressed by WADA that it had been improperly joined in the Lebedeva appeal as a Respondent.

80. In the Panel's view, nothing turns on the reservation expressed by WADA. It participated actively in each of the appeals. Indeed, it is fair to say that it played a prominent role in the calling of evidence and the presentation of submissions as to why the appeals should be dismissed. In the end, the reservation initially expressed by WADA played little or no role in the appeal as it unfolded.

81. Furthermore, the Panel notes that the issue of the standing to be sued is, according to the jurisprudence of the Swiss Federal Tribunal, is one of merits and not one on jurisdiction.

82. In any event, irrespective of WADA's reservation, they were parties to each appeal, did not dispute the jurisdiction of CAS to determine the appeal in question, and, in those circumstances, the Panel is comfortably satisfied that it has jurisdiction to adjudicate upon all matters raised in the relevant appeals.

VII. ADMISSIBILITY

83. Each of the Statement of Appeals was timely filed and complied with the requirements of the Code, including the payment of the CAS Court Office fee. No party disputes the admissibility of each of the appeals.

84. It follows that the appeals are admissible.

VIII. APPLICABLE LAW

85. Article R28 of the Code provides that the seat of the CAS and of each Arbitration Panel is in Lausanne, Switzerland. Swiss procedural law therefore applies to these Arbitrations. Regarding the law applicable to the merits, Article R58 of the Code provides the following:

> *"The panel shall decide the dispute according to the applicable regulations and, subsidiarily, to the rules of law chosen by the parties or, in the absence of such choice, according to the law of the country in which the federation, association or sports-related body which has issued the challenge decision is domiciled or according to the rules of law the Panel deems appropriate. In the latter case, the Panel shall give reasons for its decision".*

86. On the merits, the IOC anti-doping rules applicable to the Olympic Games of Beijing and London are applicable in the present appeals.

87. Since the IOC is a Swiss entity, Swiss law applies subsidiarily.

IX. MERITS OF THE APPEAL

88. The central issue in these appeals is *"the scientific reliability of the testing methodology initially theorised in 2012 (and applied by the Cologne and Lausanne laboratories) to detect the long-term metabolites of Turinabol …"* (see the Appellants' letter to the CAS Court Office dated 27 November 2017).

89. An important preliminary issue is to determine which party bears the burden of proof concerning such *"scientific reliability"* or *"scientific validity"*.

90. The ADR applicable to both the Beijing Olympics and the London Olympics were, as required, substantially identical to the then current versions of the WADC. However, those then-current versions of the WADC (and hence the relevant ADRs) did not contain an important provision introduced into the 2015 WADC. That provision is Article 3.2.1 which reads as follows:

> *"3.2 Methods of establishing facts and presumptions*
>
> *Facts related to anti-doping rule violations may be established by any reliable means, including admissions. The following rules of proof shall be applicable in doping cases:*
>
> *3.2.1 Analytical methods or decision limits approved by WADA after consultation with the relevant scientific community and which have been the subject of peer review are presumed to be scientifically valid …".*

91. Ordinarily the IOC, as the relevant anti-doping organisation, would have the burden of establishing that an anti-doping rule violation has occurred to the comfortable satisfaction of the Panel and that burden would include satisfying the Panel of the scientific validity of the analytical methods adopted by the laboratories (CAS 2011/A/2566). The question is whether Article 3.2.1, in the present proceedings, reverses that burden of proof concerning the scientific validity of the analytical methods employed by the laboratories in a context where the relevant alleged anti-doping rule violations occurred well prior to the introduction of Article 3.2.1 into the WADC.

92. In each of the Statements of Appeal, the Appellants conceded the application of Article 3.2.1 of the 2015 WADC. Moreover, in their closing address, counsel for the Appellants again frankly acknowledged that the burden was upon the athletes to challenge the methodology adopted by the laboratories as a result of Article 3 of the 2015 WADC.

93. The Panel believes these concessions were properly made and accurately reflect the correct position. As stated in Ms Lebedeva's Statement of Appeal:

> *"The burden of proof issue is a complex of procedural rules, not material ones, so the procedural rules existing at the moment when the proceedings started should apply, not the old ones".*

94. The 2015 WADC and, in particular, Article 3.2.1, were the procedural rules existing at the time each of the proceedings, giving rise to these appeals, was commenced. Accordingly, as accepted by the Appellants, the Panel is of the view that the Appellants bear the burden of proving that the testing procedures adopted by the Lausanne and Cologne laboratories were not scientifically valid.

95. As the Appellants pointed out, there is no definition of *"scientifically valid"* in the 2015 WADC. The Appellants were also not able to offer any definition, generally accepted in the scientific community, of such an expression. Rather, the Appellants put forward their own definition during the course of oral argument. First, they asserted that a testing method or procedure could not be scientifically valid unless it identified the correct substance 100 times out of 100 and that it was not scientifically valid if another substance (even another prohibited substance) could possibly be the source of a positive finding for the specific Prohibited Substance identified. By closing address, the Appellants had become even firmer on the relevant definition. In closing, counsel for the Appellants submitted that the method adopted will be unsound and not scientifically valid if there was one false positive out of a million.

96. The Panel does not accept that the expression *"scientifically valid"*, as used in Article 3.2.1 of the 2015 WADC, can have such a stringent meaning. Absolute infallibility of a testing procedure is not required. Even if it were, however, for the reasons given below, the Panel is comfortably satisfied that the Appellants have not shown that the testing procedures adopted by the laboratories were not *"scientifically valid"*.

97. As stated by Professor Ayotte in her report dated 28 February 2018, there are established principles that guide a confirmatory analysis for a prohibited endogenous substance such as DHCMT. They are as follows:

> *"1. In order to fit the purpose, a valid confirmation method shall be specific to the substance of interest (or its metabolites) and not affected by interferences (WADC International Standard for Laboratories June 2016 (I.S.L.) section 5.4.4.2.1).*
>
> *2. An adverse finding is reported when the unequivocal identification of the substance for its metabolite in the urine sample of an athlete is demonstrated by meeting the stringent criteria for identification contained in WADA Technical Document (TD 2015 IDCR). Those criteria are twofold:*
>
> *(i) Chromatographic, and*
>
> *(ii) Mass spectrometric.*
>
> *Not only shall a minimum of two precursor-product transitions (Tandem MS) (or ion-transitions) be present but*

(i) 'The relevant abundances of any of the diagnostic ions shall not differ from the corresponding relative abundances of the same ions acquired from a spiked positive control urine, Reference Collection sample, or Reference Material', and

(ii) 'The retention time (RT) of the analyte's chromatographic peak in the Sample shall not differ by more than 1% or plus or minus 0.1 minutes (whichever is greater, but not exceeding the full-width-at-half-maximum, FWHM), from that of the same analyte in a spiked sample, Reference Collection sample, or Reference Material analysed in the same analytical batch'".

98. Neither the Appellants nor the experts called on behalf of them challenged these principles.

99. Expressed in lay terms, it therefore appears to be common ground that, for the purposes of an anti-doping rule violation, a sample taken from an athlete will only be found to contain a specific Prohibited Substance if, when compared to a reference sample or the like of the Prohibited Substance in question, there is an identity or very near identity in the two samples between:

(a) At least two ion transitions;

(b) The abundances of the diagnostic ions; and

(c) The retention times for the particular substance.

100. The importance of these principles relates to the Appellants' challenge to the testing procedures based on the possibility of false positives. The Panel returns to this issue later in these reasons.

101. In support of their various cases, the parties called a number of highly qualified scientific experts. The Appellants also furnished reports from a number of experts who were not called as witnesses at the oral hearing. They could not, thus, be cross-examined or otherwise have their views and opinions exposed to scrutiny. In such circumstances, the Panel places no material weight on the evidence of experts who were not called as witnesses at the hearing.

102. The Panel was greatly assisted by the expert evidence of the remaining witnesses, who gave evidence. The oral evidence of the experts was adduced mainly on a concurrent basis (colloquially called a *"hot tub"* process), whereby the relevant experts in respect of each particular topic made presentations, and were subject to questioning by each other, by counsel representing the parties, and by members of the Panel. Concurrent evidence was given on three topics, namely:

(a) The method for detection of the M3 metabolite;

(b) The synthesis of M3 and validation against urinary reference material; and

(c) Other chemicals impersonating M3 metabolite and potential for false positives.

103. Each of the members of the Panel is a lawyer not a scientist. It is often a difficult, if not invidious, task to determine which of competing expert views should be accepted in such circumstances. In approaching the task, the Panel has borne in mind the following matters:

(a) The expert's duty is not to represent the interests of the party calling him or her, but, rather, to express his or her views honestly and as fully as necessary for the purpose of a case. An expert should provide independent, impartial assistance to the Panel. An expert should not be an advocate for any party;

(b) The Panel cannot completely disregard any expert evidence which is otherwise admissible or before it. Rather the Panel must pay regard to the content of the expert evidence, but it is not bound by it, or required blindly to follow it;

(c) The expert opinion should be comprehensible and lead to conclusions that are rationally based, with reasoning explained. The process of inference that leads to conclusions must be stated or revealed in a way that enables conclusions to be tested and a judgment made about their reliability;

(d) In order to prevent deception or mistake and to allow the possibility of effective response, there must be a demonstrable objective procedure for reaching the expert opinion so that qualified persons can either duplicate the result or criticise the means by which it was reached, drawing their own conclusions from the underlying facts;

(e) The value of expert evidence depends upon the authority, experience and qualifications of the expert and, above all, upon the extent to which his or her evidence carries conviction; and

(f) In cases where experts differ, the Panel will apply logic and common sense in deciding which view is to be preferred, or which parts of the evidence are to be accepted.

104. For the reasons which follow, having considered the expert evidence through the filters discussed above, the Panel is comfortably satisfied that the Appellants have not discharged their burden of proving that the testing methods adopted by the laboratories, which led to the positive findings against each of them, were not scientifically valid in accordance with the standard required to be applied in these proceedings.

105. To the extent to which there was a difference of opinion between the experts called by the Appellants, on the one hand, or the IOC/WADA, on the other hand, the Panel accepts the expert evidence given on behalf of the IOC/WADA. In particular, the Panel accepts the evidence of the principal scientific expert called by WADA, Professor Ayotte. Her reasoning appeared to be rational, logical, thoroughly researched, and clearly presented. She was not shaken in any way by questioning from the other experts during the concurrent evidence

session, or by cross-examination of counsel for the Appellants. She supported her views and opinions by detailed and careful research and supporting reference material.

106. In what follows, the Panel does not propose to dissect the evidence of each individual expert witness called, nor to comment, individually, on its assessment of the evidence of any particular expert unless necessary to do so. Rather, it proposes to comment on the expert evidence more globally in relation to the particular issues raised.

107. Leaving aside for the moment the *"false positive"* issue, which emerged as the main scientific issue in the appeal, the Panel is comfortably satisfied that none of the other criticisms by the Appellants of the testing procedures adopted by the laboratories has any substance. It is notable that the expert witnesses, whom the Appellants called, with the exception of Dr Kopylov, gave evidence primarily in respect of the *"false positive"* issue and not on the other challenges made. The expert evidence in respect of those other challenges was mainly that of Dr Kopylov. Even so, although one may have thought that Dr Kopylov's evidence would have been at the forefront of the Appellants' case, it was, as submitted by the Respondents, placed further in the background by the Appellants. Dr Kopylov did not attend the hearing in person, but, rather, by video link.

108. Unfortunately, the Panel was not impressed by Dr Kopylov as a witness. He frequently appeared to be expressing the views of an advocate, rather than an expert witness.

109. The first criticism made by the Appellants of the testing procedure was to challenge the basis for identifying M3 as a metabolite of Turinabol. There were a number of insuperable problems for this challenge. First, other long-term metabolites, particularly M2, were also identified by Doctors Sobelevsky and Rodchenkov in their paper and two of the Appellants, in these appeals, also tested positive for the M2 metabolite. No challenge was made in respect of the identification of that metabolite.

110. Secondly, as pointed out in the WADA report of 26 January 2017, this challenge was based on factual errors. Those were errors in the interpretation of the mass spectrometric data relied upon by Doctors Sobelevsky and Rodchenkov. Dr Kopylov made significant mistakes as detailed at pp.13-14 of that WADA report. The Appellants did not challenge that those mistakes were made.

111. The criticism of the testing procedure that there were no negative controls is also factually wrong. The evidence established that, since 2012, WADA-accredited laboratories have done hundreds of thousands of tests using these procedures, all of which included negative control samples in the initial testing and confirmation procedures. Once more, ultimately, neither the Appellants nor any expert witness called by the Appellants sought to support the view that the testing procedure was deficient because there were no negative controls.

112. The next criticism made of the testing procedure was that it did not allow for any post-administration assay. Once more, the evidence established that this was factually false. None of the experts called by the Appellants gave any oral evidence in respect of this issue nor were any relevant submissions made by the Appellants' counsel.

113. Next, the testing procedure was criticised on the basis that no synthetic standards could confirm that the proposed chemical structures and the spectra. Initially, to the extent that it was relevant, it was correct to say that there were no such synthetic standards. However, in the first place, the ISL did not require such synthetic standards in order for the testing procedures to be appropriate and, much more significantly, by July 2017, a synthetic standard of M3 had been produced after painstaking efforts. As stated in the letter from WADA to the CAS Court Office dated 26 July 2017, the production of the synthetic standard of M3 was *"an additional and final confirmation of the validity of the M3-metabolite identified in the peer-review publication of Doctors Sobelevsky and Rodchenkov as a DHCMT long-term metabolite"*. Moreover, the evidence established that the synthetic material so produced had been distributed to several WADA-accredited laboratories, which had reported metabolites of DHCMT in athletes' samples. Those laboratories performed their validation processes (including the laboratories of Lausanne and Cologne), confirming that the synthetic reference material was identical to the positive reference material they had been using since they began to search for M3, and therefore fit for the purpose of detecting this metabolite of DHCMT.

114. Notably, the Appellants' response to the *"new evidence"* produced by IOC/WADA about the production of the synthetic standard of M3 did not, in any way, seek to challenge that evidence or the efficacy of that synthesis. Rather, it focused on raising another issue, namely the *"false positive"* issue.

115. Indeed, ultimately, none of the experts called on behalf of the Appellants sought to challenge in any substantial way the reliability or accuracy of the method employed to produce the synthetic standard of M3, nor of its correspondence with the positive reference materials the laboratories had been using in their testing for M3.

116. Further, the Appellants ultimately made no specific submissions concerning the alleged absence of a synthetic standard. In these circumstances, the Panel is comfortably satisfied that there is no merit in this criticism of the testing procedures adopted.

117. The next criticism made of the testing procedures focused on Doctors Sobelevsky and Rodchenkov's estimate of the *"detection window"* for the novel metabolites.

118. With respect, the Panel regards this as an irrelevant criticism. First the metabolites were either detected or not. That is what matters. Establishing the period (window) of the detection of a metabolite of a compound, which is prohibited at all times, is not an element associated with its identification as a marker of the administration of the parent prohibited substance.

119. Further, once more, little or nothing was heard of this criticism during the oral hearing. None of the experts called by the Appellants placed any significance on this matter. Significantly, it was not mentioned by counsel for the Appellants in their final address.

120. Moreover, in line with the Respondents' submission, the evidence furnished by the Appellants showed no significant discrepancies between the presented data and its interpretation. No evidence was produced of any research study contradicting Doctors Sobelevsky and Rodchenkov's results or disputing the conclusions that had been published since 2012.

121. Regarding the *"alleged inconsistencies of the proposed structures with those found and validated by the authors"*, this Panel finds itself in the same position as the IOC Disciplinary Commission when it heard Ms Gnidenko's case. Concerning this allegation, the Disciplinary Commission said in paragraph 112 of its decision that it:

> *"understands the study to which Dr Kopylov refers describes the transformation of the substance into specific metabolites in-vitro, through the application of a particular enzyme. … This does not logically exclude that the metabolites in question, which were not identified in the study, resulted from other more complex enzymatic pathways in the body. In any event, the excretion studies (and the results which have been obtained over years of application) confirm that the metabolites in question are effectively obtained further to the administration of the prohibited substance. There is therefore no inconsistency between the publication to which Dr Kopylov refers and the identification of the substance by the method at issue. It is notable that the study in question was precisely issued by a team of the Cologne laboratory".*

122. Once more, the Panel notes that virtually nothing was said about this alleged criticism at the oral hearing either by the Appellants' expert witnesses or by the Appellants' counsel in either their opening or closing addresses.

123. The next criticism made by the Appellants was that there was no confirmation of the proposed chemical structures by alternative approaches especially by the use of *in-vitro* models. The Panel accepts the evidence of Professor Ayotte that *in-vitro* studies are a poor replica of metabolism in the human body and thus a poor way of testing for long-term metabolites.

124. Professor Ayotte gave oral evidence as to the problems with *in-vitro* experiments and in particular the ones relied upon by Dr Kopylov. She explained that with *in-vitro* experiment attempts to mimic what the body would do. However, in the experiments in question, the scientists conducting the experiment did not add enzymes at the required position to produce the M3, so that there was no way the experiment could produce the M3. She described this as a *"fairly simple explanation"*. Ultimately, Dr Kopylov accepted *"without hesitation"* Professor Ayotte's explanation about the limitations of the *in-vitro* experiments relied upon and, unsurprisingly, such a criticism formed no part of the closing addresses of counsel for the Respondents.

125. That leaves only the *"false positive"* issue.

126. It is important to note that no challenge was made to the identification criteria adopted by the laboratories and which are set out in WADA Technical Document TD2015 IDCR (see paragraph 96 above). Given the absence of such a challenge, it can only be if a substance other than Turinabol (or another closely related prohibited steroid) could satisfy those criteria that there would be a possibility of a *"false positive"* for the M3 metabolite.

127. The uncontradicted expert evidence of Professor Ayotte was that several other very closely related steroid products (all of which were prohibited substances themselves) also had metabolites which satisfied the identification criteria for the M3 metabolite. The Panel will return to whether the fact that other prohibited steroids may be *"imposters"* for Turinabol because of the presence of the M3 metabolite is sufficient for the Appellants' case. Leaving that to one side for the present, however, it is important to first discuss the other possible non-steroid *"imposters"* for the M3 metabolite.

128. The Appellants proffered two and only two.

129. First, a substance known as cholesterol chlorohydrin (sometimes called chlorinated cholesterol) and secondly a substance called monochloro-dehydroabietic acid (MCDHAA).

130. The Appellants relied on purely theoretical calculations and criteria in support of their case that each of these two substances may produce a false positive for the metabolite M3, and thus be mistaken for Turinabol in the testing procedure. They did not offer any evidence that they had actually tested any product. However, Dr Buckley, one of the Appellants' experts, agreed that a proper scientific method dictated *"defaulting"* to the actual product when it is available. He agreed that *"actual data"* trumped theoretical data.

131. Dealing with chlorinated cholesterol first, the Appellants' experts, particularly Dr Kopylov, ultimately agreed that it could not be confused with M3 in its exogenous state. The Appellants' ultimate case was that such cholesterol may be further metabolised inside the human body (i.e., endogenously) to look like M3. No evidence was adduced to prove this theory. In the Panel's view, it is in the realms of speculation.

132. The Appellants made no attempt to seek to prove how such endogenously produced chlorinated cholesterol could satisfy all of the identification criteria required by the WADA testing document so as to resemble M3 when tested for doping purposes. One important element of the identification of a prohibited substance is its retention time. As noted above, this criterion requires that the retention time of the reference standard and the metabolite do not differ by more than plus or minus 0.1 min. As noted by Professor Ayotte in her report of 28 February 2018 (and not in any way contradicted by any evidence called on behalf of the Appellants), cholesterol is present in human urine. Usually it is found to have a retention time

of 18.2 mins whilst the metabolite M3 of DHCMT elutes (i.e., has a retention time) at 15.2 mins. As Professor Ayotte opined:

"There is not a chance of finding this 'imposter' at the same retention time as DHCMT metabolite M3".

133. In her report, Professor Ayotte gives further convincing reasons why chlorinated cholesterol could not be mistaken for the metabolite M3 if tested according to the WADA testing standards, which the Panel accepts but does not feel necessary to set out. It suffices to say that there is no evidence to support the theory that exogenously or endogenously produced chlorinated cholesterol could be mistaken for the metabolite M3 if the identification criteria are followed.

134. The other potential imposter for the M3 metabolite identified by the Appellants was MCDHAA. It is used in the pulp and paper industry, and can be detected in its relevant form in effluence from factories. Once more, the Appellants' experts, notably Doctors Yang and Buckley, performed a purely theoretical exercise, without testing the actual product, to come to the opinion that this acid could be confused in a doping test for the M3 metabolite. Professor Ayotte, on the other hand, gave clear written and oral evidence saying that that was *"impossible"*.

135. In this regard, Professor Ayotte had a distinct advantage over the Appellants' experts. She had obtained and tested actual commercial mixtures of the acid. As Doctor Buckley frankly conceded, testing an actual product is better than doing a theoretical exercise. Further, late in the hearing, it emerged that the Appellants had in fact obtained amounts of the actual product for testing purposes, but had decided not to present the results to this Panel because, according to Dr Yang, the results of the testing were only preliminary data, and, according to counsel for the Appellants, the results of the tests of the actual product were *"not reliable"*.

136. In any event, the Panel has no hesitation in accepting Professor Ayotte's conclusion based on her testing of the actual product that it is impossible to mistake this substance for the metabolite M3 using the identification criteria.

137. In her report dated 28 February 2018, Professor Ayotte summarises the position as follows:

"In order to demonstrate that no false positive would be established for DHCMT metabolite M3 in the presence of monochlorodehydroabietic acids we have analysed the commercial mixture of 12-chloro and 14-chloro dehydroabietic acids (TMS) at a concentration of 15mg\mL in the GC-MS/MS confirmation method that we routinely employ in the Montreal laboratory. The results are clearly negative: these compounds do not interfere at all with the detection of metabolite M3, DHCMT or other long-term metabolites …".

138. In her oral evidence at the hearing, Professor Ayotte gave a PowerPoint presentation further explaining the impossibility of confusing this product with the metabolite M3. That exercise, which was based on evidence before the Panel, demonstrated, amongst other things, that the retention time for the actual abietic acid tested by Professor Ayotte was 13.4 mins, whereas the

retention time for the metabolite M3 was 15.3 mins. This is a discrepancy far outside that permitted by the identification criteria and, by itself, would mean that one substance could not be confused for the other. Moreover, the document contains a diagram of the chemical structure of MCDHAA acid and the metabolite M3. Professor Ayotte's conclusion that the two structures are *"not even closely related"* was not undermined by any evidence or cross-examination of the Appellants.

139. In the end, in the Panel's view, the Appellants have undertaken a purely theoretical exercise from which they have concluded that it is possible that these two substances might be confused for the metabolite M3 pursuant to the identification criteria, without any actual evidence of attempts to determine whether those criteria are or would be met in respect of the two products in question. On the other hand, the Respondents have actually tested the most likely candidate for confusion and demonstrated that it could not be so confused. In respect of the other candidate, chlorinated cholesterol, the Appellants' case changed dramatically at the hearing. It now amounts to no more than speculation that somehow or rather such cholesterol could be further metabolised endogenously (that is within the human body) so that it would then meet the identification criteria. Not one piece of evidence has been put forward to substantiate this theory.

140. There remains the question of other prohibited substances being confused for Turinabol because they share the same long-term metabolites. These structures are identified by Professor Ayotte. It appears to be common ground that each of those substances is a Prohibited Substance for the purposes of the ADRs and/or WADC.

141. The Appellants submit that the fact that, using the identification criteria, Turinabol may be confused for another prohibited substance necessarily means that the testing procedure is not scientifically valid for the purposes of Article 3.2.1 of the 2015 WADC. The Panel does not accept that submission. As Professor Ayotte's evidence makes clear, all of the possible prohibited substances which contain the metabolite M3 are very closely structurally related and a test carried out according to the identification criteria would identify, and only identify, such prohibited substances of a very closely related nature. In these circumstances, the Panel is comfortably satisfied that, in fact, the testing procedure is a scientifically valid one for the purpose for which it is intended, namely the detection of prohibited substances and prohibited substances only.

142. In any event, even if this conclusion is not the correct one, it makes no difference on the facts of the present case. Under each of the ADRs an anti-doping rule violation occurs when the presence of a Prohibited Substance or its Metabolites is found in an athlete's bodily specimen (see, e.g., Article 2.1 of the ADR for the Beijing Olympics). Under the ADRs the consequence of such a violation is set out in Article 9.1 of the ADR, namely that an anti-doping rule violation may lead to the disqualification of all of the athlete's results in the Olympic Games with all consequences, including forfeiture of all medals, points and prizes, except if the athlete

establishes that he or she bears no fault or negligence for the violation. It is to be noted that none of the Appellants relied, in this appeal, on the provisions relating to *"no fault or negligence"* as a reason for overturning the decisions appealed against.

143. The consequences imposed by Article 9.1 of the anti-doping rules applying to the Beijing Olympics and the counterpart provision in the ADRs applying to the London Olympics remain the same whichever prohibited substance or metabolite is detected within the athlete's bodily specimen. Those consequences do not vary if the prohibited substance is a different, but closely related, form of banned steroid.

144. In view of all the above, the Panel concludes that the appeals filed by each of the Appellants must be dismissed and that the Appealed Decisions must be confirmed.

ON THESE GROUNDS

The Court of Arbitration for Sport rules that:

In CAS 2016/A/4803:

1. The Appeal filed by Ms Gnidenko on 28 September 2016 against the decision of the IOC Disciplinary Commission rendered on 7 September 2016 is dismissed.

2. The decision of the IOC Disciplinary Commission dated 7 September 2016 is confirmed.

(…)

5. All further requests for relief are dismissed.

In CAS 2016/A/4804:

1. The Appeal filed by Ms Maria Abakumova on 28 September 2016 against the decision of the IOC Disciplinary Committee rendered on 7 September 2016 is dismissed.

2. The decision of the IOC Disciplinary Committee rendered on 7 September 2016 is confirmed.

(…)

5. All further requests for relief are dismissed.

In CAS 2017/A/4983:

1. The Appeal filed by Ms Tatyana Lebedeva on 14 February 2017 against the decision of the IOC Disciplinary Committee rendered on 25 January 2017 is dismissed.

2. The decision of the IOC Disciplinary Committee rendered on 25 January 2017 is confirmed.

(…)

5. All further requests for relief are dismissed.