Nos. 24-38, 24-43

IN THE

Supreme Court of the United States

BRADLEY LITTLE, GOVERNOR OF IDAHO, *et al.*,
Petitioners,
v.
LINDSAY HECOX, *et al.*,
Respondents.

WEST VIRGINIA, *et al.*,
Petitioners,
v.
B.P.J., BY HER NEXT FRIEND AND MOTHER, HEATHER JACKSON,
Respondents.

On Writs of Certiorari to the United States Courts of Appeals for the Ninth and Fourth Circuits

BRIEF OF EMMA HILTON PhD AND THE INTERNATIONAL CONSORTIUM ON FEMALE SPORT AS *AMICI CURIAE* IN SUPPORT OF PETITIONER EXPLAINING THE IMPORTANCE OF SEX-VERIFICATION-SCREENING TO PROTECT EQUAL OPPORTUNITIES IN WOMEN'S SPORT

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INTEREST OF AMICUS CURIAE[1]

Amici are Emma Hilton PhD and the International Consortium on Female Sport (ICFS).

Dr. Hilton is a developmental biologist at the University of Manchester, UK, with extensive expertise in developmental genetics. She has authored multiple peer-reviewed analyses on male[2] sex development, athletic advantage, the effects of testosterone suppression, and the use of sex-screening to determine eligibility for the female category in sport. Dr Hilton is widely consulted and cited in sports federation policies concerning transgender athletes and individuals with disorders of sex development, and the use of sex-screening to protect the women's category in sport. A copy of her curriculum vitae is attached as Appendix A.

The International Consortium on Female Sport (ICFS) is a non-governmental organization of sports organizations and women's sports advocates from across the political spectrum and around the world committed to the principle that "fairness and safety for

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[1] Rule 37 statement: No party's counsel authored any of this brief; amici alone funded its preparation and submission. *See* Sup. Ct. R. 37.6.

[2] As used in this brief the terms "male" and "female" and "man" and "woman" and "girls" and "boys" are used to refer solely to members of the male or female sex and without regard to gender identification. Therefore, for example, the term "female athlete" refers to a competitor who is biologically female at birth and who has not experienced male development.

female athletes in sport is ensured by having a dedicated category for those born female." https://www.icfsport.org/. Accordingly, ICFS advocates for the use of discreet and scientifically robust sex-screening protocols to protect the women's category of sport from participation by individuals with male physiological advantages.

SUMMARY OF ARGUMENT

Both courts below in *Little, et al. v. Hecox, et al.* misunderstood sex-verification-screening and erred in condemning it as a tool for protecting equal opportunities in women's scholastic sport.

In fact, modern scientific methods of sex-screening are non-intrusive, highly sensitive, and can be inexpensively and discreetly applied to easily verify the eligibility of 99.9% of women to compete in women's sports.

Only in exceedingly rare instances in which an *SRY* gene is detected will it be necessary to progress to standard medical workflows to assess whether a rare genetic condition is present that negates male physical development even where the *SRY* gene is present. In these rare instances resorting to standard medical diagnosis can determine whether male physiological development is present in order to permit individuals who have not experienced that development to compete in women's sports.

This case presents an excellent opportunity for the Court to recognize that sex-verification-screening is a reasonable tool for assessing the absence of male developmental pathways to confirm eligibility to compete in women's sport and make clear that Title IX requires the implementation of reasonable practices to protect women's equal opportunities in scholastic sports.

ARGUMENT

I. Protection of Equal Opportunities in Women's Sports Requires Effective and Reliable Sex-Verification

In *Hecox* the district court found that, "[w]hen Jane tries out for Boise High's women's soccer team, she will be subject to the possibility of embarrassment, harassment, and invasion of privacy through having to verify her sex." *Hecox v. Little*, 479 F. Supp. 3d 930, 987 (D. Idaho 2020). The Ninth Circuit upheld this finding. *Hecox v. Little*, 104 F.4th 1061, 1087 (9th Cir. 2024). Both opinions evince a profound misunderstanding of sex-verification-screening in sport and why such verification is essential to comply with Title IX.

Title IX mandates equal athletic opportunities for women in scholastic sports. The Title IX athletics regulation, 34 C.F.R. § 106.41 (hereafter the "athletics regulation"), plainly state that

> No person shall, on the basis of sex, be excluded from participation in, be denied the benefits of, be treated differently from another person or otherwise be discriminated against in any interscholastic, intercollegiate, club or intermural athletics offered by a recipient …

In practice, equal opportunities for women in sport are achieved by maintaining a separate sports category, i.e., separate sports teams, for women. *See*

Soule v. Connecticut Ass'n of Sch., Inc., 90 F.4th 34, 63 (2d Cir. 2023) (Menashi, J. and Park, J., concurring) ("the Title IX framework effectively requires a recipient to maintain separate sports teams"). Thus, the Title IX athletics regulation endorses "separate teams for members of each sex" in sports requiring "competitive skill" and/or in sports which, due to collisions or "bodily contact," are considered a "contact sport." 34 C.F.R. § 106.41(b). *See, e.g., O 'Connor v. Bd. of Educ. of Sch. Dist. 23, 449* U.S. 1301, 1307 (1980) (Stevens, J., in chambers) ("Without a gender-based classification in competitive contact sports, there would be a substantial risk that boys would dominate the girls' programs and deny them an equal opportunity to compete in interscholastic events.")

Obviously, however, sex-separated sports teams are meaningless without an effective way to ensure that the participants on women's teams are in fact women. Thus, *amici* posit that Title IX cannot work as intended without an effective means of verifying and validating the sex of competitors in women's sports.

Today, women at all levels of scholastic sport (elementary school, junior high, high school, junior college and college) are regularly confronted by boys and men who seek to compete on women's teams. Many of the male competitors in women's sport are trans-identifying males, meaning that these males claim a feminine gender identity and typically seek to present themselves as feminine in every way, including using a traditionally feminine name and pronouns, seeking surgical and hormonal interventions to help them present as feminine, and seeking to pass themselves off as female, consistent

with their self-professed gender identity.

Experience has shown that many of the males who seek to compete in women's sports were "transitioned" by their parents at very young ages and taught to live as girls. *See*, *e.g.*, *Tirrell v. Edelblut*, No. 24-CV-251-LM-TSM, 2024 WL 3898544, at *2 (D.N.H. Aug. 22, 2024) ("When a transgender girl and her parents seek treatment for gender dysphoria *prior to the onset of puberty*, providers may prescribe puberty-blocking medication to prevent the development of physical characteristics that conflict with the child's gender identity.") (emphasis added); *Doe v. Hanover Cnty. Sch. Bd.*, No. 3:24CV493, 2024 WL 3850810, at *2 (E.D. Va. Aug. 16, 2024) ("*when Janie was nine years old, she received a histrelin implant*.") (emphasis added); *Doe v. Horne*, 683 F. Supp. 3d 950, 960 (D. Ariz. 2023), *aff'd*, 115 F.4th 1083 (9th Cir. 2024) ("Megan has been *taking puberty blockers since she was 11 years old* as part of her medical treatment for gender dysphoria.") (emphasis added); *A.M. by E.M. v. Indianapolis Pub. Sch.*, 617 F. Supp. 3d 950, 954–55 (S.D. Ind. 2022), *appeal dismissed sub nom. A.M. by E.M. v. Indianapolis Pub. Sch. & Superintendent*, No. 22-2332, 2023 WL 371646 (7th Cir. Jan. 19, 2023), and vacated, No. 1:22-CV-01075-JMS-MKK, 2023 WL 11852464 (S.D. Ind. Jan. 19, 2023) ("Plaintiff A.M. is a ten-year-old . . . whose birth-assigned sex was male. . . . and is currently taking a puberty blocker."); *B. P. J. v. W. Virginia State Bd. of Educ.*, 550 F. Supp. 3d 347, 355 (S.D.W. Va. 2021) ("As part of treating her gender dysphoria, B.P.J. *has been on puberty delaying drugs* for over a year.") (emphasis added).

As a result of efforts by males to present as

female it is not always apparent to female athletes that certain of their competitors, or even teammates, are men. *See*, *e.g.*, *Slusser v. Mountain W. Conf.*, No. 1:24-CV-03155-SKC-MDB, 2024 WL 4876221, at *3 (D. Colo. Nov. 25, 2024), appeal dismissed sub nom. *Van Kirk v. Mountain W. Conf.*, No. 24-1461, 2025 WL 1489927 (10th Cir. May 19, 2025) (noting that a "trans teammate played [on the San Jose State University women's volleyball team] although apparently her alleged status as a trans woman was not widely suspected or assumed at the time"); *Slusser v. Mountain W. Conf.*, No. 1:24-CV-03155-SKC-MDB, ECF No. 78 (Amended Complaint) at p. 75, ¶ 364 (alleging that initially a trans-identifying male athlete's own assistant coach was unaware of his male sex); pp. 75-77, ¶¶ 365-76 (alleging that female athlete for months shared a residence with, and was roomed on road trips with, a trans-identifying male without knowing the teammate was male).

Title IX's equal opportunity mandate, requiring women to have equal opportunities to men, cannot be achieved, monitored or enforced in scholastic sports without reliable information about the sex of participants on women's teams. Further, women cannot protect their safety in contact sports or their privacy in locker rooms where there is no substantial effort to verify that there is sex-separation on supposedly sex-separated teams. The effective implementation of Title IX in scholastic sports requires the capacity to effectively differentiate between the members of each sex and allow only females on girls' and women's teams. Fortunately, science makes such verification easy, inexpensive,

discreet, and, in almost all cases, routine.

II. Factors Complicating Reliance on Birth Certificates or Self-Identification to Confirm the Sex of Female Athletes

Confirming an athlete's sex has *not* traditionally been considered difficult. Until recently birth certificates were a reliable means of ascertaining sex. However, the utility of birth certificates to accurately identify biological sex has declined.

Yet, some scholastic sport governing bodies, such as the National Collegiate Athletic Association (NCAA) and the California Community College Athletic Association (3C2A), adamantly oppose verifying the sex of athletes competing in women's sports. Consequently, multiple lawsuits are currently pending in the federal courts challenging college sports organizations' current rules which block women from reliably ascertaining whether the competitors they are facing in women's sports or even their own teammates are biologically female. *See*, *e.g.*, *Gaines, et al. v. National Collegiate Athletic Assoc., et al.*, No. 1:24-CV-01109-MHC, ECF No. 94 (Corrected Second Amended Complaint), p. 111, ¶ 411 ("The NCAA Transgender Eligibility Policies deter participation in intercollegiate athletics by women through providing insufficient information for women to protect their personal safety in sport, . . . increasing safety risks for women"), p. 165, ¶ 713 ("The NCAA does not require to be provided, nor does the NCAA provide or require member institutions or schools to provide, any notice to female competitors, even in Contact Sports and Limited-Contact Sports with a higher risk of collisions

and concussions and other injuries, that they will be facing a Male student-athlete in competition."), p. 165, ¶ 714 ("the NCAA refuses to make available information to student-athletes regarding whether any of their opponents are males who have been granted the opportunity to compete on a women's team pursuant to the NCAA's Transgender Eligibility Policies"), p. 166, ¶ 717 ("Given that the NCAA prohibits the disclosure of information regarding the sex of student-athletes, does not conduct sex-verification-testing, and does not advise women who are facing a male in competition of the sex of a male opponent, each Plaintiff . . . is concerned that she may not know in advance of competing or participating in future NCAA competitions (or practices or scrimmages) that she will be, or is, facing a male athlete."), p. 166, ¶ 718 ("These aspects of the NCAA Transgender Eligibility Policies put Plaintiffs competing in Contact and Limited-Contact Sports at increased risk of injury . . . and deprive them of information vital to the women exercising informed consent before competing head-to-head against a male athlete."); *Slusser v. Mountain W. Conf.*, No. 1:24-CV-03155-SKC-MDB, ECF No. 78 (Amended Complaint) at p. 75-77, ¶ 364-76 (discussed *supra* at 7).

A. Birth Certificates

Largely due to activists championing the easy amendment of sex designation on birth certificates to reflect the certificate holder's subjective, self-chosen gender identity, birth certificates in the United States and around the world have ceased to be reliable indicators of an individual's sex.

At least twenty-six (26) states and the District of Columbia allow a person to change the sex marker on their birth records through state law administrative procedures. *See* Appendix B at 4, *Movement Advancement Project, Identity Document Laws and Policies*. In at least fourteen (14) of those states, no medical documentation whatsoever is necessary. *Id.* Whichever sex was recorded on original birth records will not typically be reflected on a birth certificate if it is changed through a state-sanctioned process. *See e.g.*, N.J. Stat. Ann. § 26:8-40.12(b) & (c) (2024) ("The amended certificate of birth … ***shall not be marked as amended***. … [The State registrar] … shall enter the amended certificate in his local record and place his original copy of the original certificate under seal.") (emphasis added).

Similarly, many countries outside the U.S. permit the birth marker on a birth certificate to be changed through an application process. *See*, *e.g.*, https://www.germany.info/us-en/service/04-familymatters/self-determination-2671874#:~:text=Article,signature%20on%20the%20declaration%20form (Germany); https://www.govt.nz/browse/passports-citizenship-and-identity/changing-your-gender/change-the-registered-sex-on-your-birth-certificate/ (New Zealand); https://www2.gov.pt/en/cidadaos-europeus-viajar-viver-e-fazer-negocios-em-portugal/direitos-dos-cidadaos-e-das-familias-entre-paises-da-uniao-europeia/reconhecimento-de-identidade-de-genero-em-portugal#:~:text=In%20Portugal%2C%20it%20is%20possible,phone:%20211%20950%20500 (Portugal).

B. Mischaracterization of Sex as Private Medical or Educational Information

Increasingly as well, proponents of trans-identifying males participating in women's scholastic sports seek to characterize an athlete's sex or transgender status as medical information or "education records" under the Family Educational Rights and Privacy Act (FERPA) that is not publicly disclosable. *See*, *e.g.*, *Slusser v. Mountain W. Conf.*, No. 1:24-CV-03155-SKC-MDB, ECF No. 58-1 (Transcript of pre-hearing conference) at p. 25 (transcript p. 24), lines 14 – 25 (statement of counsel for San Jose State University) ("I do want to make sure that we're mindful of the privacy rights of the student-athletes on this SJSU state team. And I would hate for there to be testimony or argument in -- or offers of proof in open court about the gender identity or medical information or anything along those lines of any of the student-athletes on our team."); *see also Slusser,* No. 1:24-cv-03155, ECF No. 67 (CSU Defendants' Rule 12(b) Motion to Dismiss) (repeatedly referring to trans-identifying male volleyball player on the school's women's volleyball team as "the allegedly transgender player").

In this way, FERPA has been erroneously relied upon as an excuse for schools to not enforce Title IX's standards, particularly in women's sports, where faithful implementation of the Title IX athletics regulation depends upon an ability to identify individuals by their "sex." *See*, *e.g.*, Title IX Complaint Against Sonoma County Junior College District d/b/a Santa Rosa Junior College, *at*:

https://iconswomen.com/wp-content/uploads/2025/09/Title-IX-Complaint-to-Department-of-Education-Office-of-Civil-Rights.pdf at ¶¶ 73, 77 n. 16 (noting that junior college was attempting to rely on FERPA to characterize sex and/or gender identity as confidential and not disclosable information).

C. The NCAA's Current Eligibility Policy for Transgender Student-Athletes Relies on Changeable Birth Certificates

Currently, female athletes at more than 1,100 NCAA member colleges and universities, including at Petitioner Boise State University, are vulnerable to men competing against them or on their college team because the NCAA's "Participation Policy for Transgender Student-Athletes" (effective Feb. 5, 2025) provides that schools subject to Title IX need look no further than unreliable birth certificates to assess eligibility for an NCAA women's team. The NCAA's latest policy iteration states the standard for determining "sex assigned at birth" is solely "[t]he male or female designation . . . marked on their birth records." https://www.ncaa.org/sports/2022/1/27/transgender-participation-policy.aspx. Although the NCAA policy says, "students assigned male at birth may not compete on a women's team with amended birth certificates," this statement is meaningless given that when birth certificates are amended by state officials, the resulting certificate does not typically record any amendment. *See, e.g.*, N.J. Stat. Ann. § 26:8-40.12(b) & (c) (2024).

The NCAA policy also contains a proviso allowing schools to elect to follow local and state laws which may "supersede[] the rules of the NCAA," regarding the participation of transgender student-athletes. https://www.ncaa.org/sports/2022/1/27/transgender-participation-policy.aspx. This means that in States with laws that conflate gender identity with biological sex, the NCAA policy authorizes member schools to allow trans-identifying males to compete on women's teams.

The Mountain West Conference,[3] of which Petitioner Boise State University is a member, has a written policy *prohibiting inquiries* to the Conference or the NCAA concerning transgender student-athlete eligibility and exempting its member schools from even informing the Conference if a school has a male transgender student-athlete competing on a women's team. https://storage.googleapis.com/themw-com/2025/02/ec83f001-appendix-j.pdf.

D. 3C2A Transgender Policy Blocks the Assessment of Biological Sex

Another example of a college athletic association policy that improperly bars evaluation of an individual's biological "sex" before they are eligible to compete in women's sports is 3C2A Bylaw 1.11 which states that a trans-identifying male who begins a "gender transition" during college may compete on a women's team after a year of testosterone suppression. https://3c2asports.org/Constitution/2025-

[3] A member conference of the NCAA.

26/Bylaw_1.pdf. However, if the "gender transition" takes place before enrollment at a 3C2A school the man "need not disclose their gender identity or history to their college or the 3C2A." *Id.*

Thus, the Title IX equal opportunity rights of female athletes at all 112 community colleges with varsity athletics programs in California are not adequately protected, given there is no attempt to verify the sex of participants in women's sports at California community colleges. Bylaw 1.11 impedes women student-athletes in California community colleges from discovering whether men are competing with or against them in competitive sport.

III. Sport Participation Has Traditionally Required Submission of Objective Health Information

As explained above, college athletic associations, including the NCAA, lack a process for reliably identifying the biological sex of student-athletes who seek to participate on women's teams or for making this essential information available to women. Yet, at that same time these organizations demand student-athletes provide much more sensitive and detailed data about their health and other physical characteristics,

A. Drug Testing in Sport

The idea that requiring sex-verification is overly intrusive in the context of competitive sports is untenable. For example, while the NCAA has not implemented sex-verification-screening and instead

favors unreliable birth certificates as the sole measurement tool to assess eligibility for female sports, the NCAA requires college athletes to submit to urine sample collection for drug testing purposes. Samples for drug testing collection protocols require the athlete with no advance notice and upon the NCAA's unilateral demand, to provide a urine sample while the drug testing officer (to ensure sample fidelity) watches urinal excretion in real time. That is, a drug testing officer has an unimpeded view of the athletes' external genitals, with consent from the athlete and mutual contractual recognition that eligibility criteria can require uncomfortable testing protocols.
https://ncaaorg.s3.amazonaws.com/ssi/substance/SSI_DrugTestingManual.pdf ("The DCO or their designee will fully observe the provision of the student-athlete specimen.").

The NCAA's required visual monitoring of urine excretion and collection of observed drug testing samples for both male and female student-athletes is far more intrusive than the cheek swab that, as explained below, could be used by the NCAA to reliably verify a student-athlete's biological sex in 99.9 percent of cases.

B. Pre-participation Physicals and Required Medical Disclosures

"An annual [Preparticipation Physical or "PPE"] is required by most state high school athletic associations for participation in school-based sports[.]" McDonald, J., et al., The Preparticipation Physical Evaluation, 103(9) *AM FAM PHYSICIAN*, 539-546 (2021).

The published guideline of the American Academy of Pediatrics, recommends that the PPE "include a structured physical examination that focuses on the cardiovascular, musculoskeletal, and neurologic systems. Screening for depression, anxiety disorders, and attention-deficit/hyperactivity disorder is also recommended." *Id.*

An example of the detailed medical information that college athletes must provide on a pre-participation physical each year before participating in college sports is reflected on the linked exemplar, which is the form used by Cornell University for its intercollegiate athletes. This form compels the collection and submission of information regarding blood pressure rate, heart rate, hemoglobin level, sickle cell trait test results, evidence of impaired organs, and a history of hospitalizations and current health issues and related medical records. https://health.cornell.edu/sites/health/files/docs/Requirements/PhysicalExam.pdf.

Additionally, NCAA legislation requires that all member schools report every concussion suffered by its student athletes. Every member school must "report all instances of diagnosed sport-related concussions in student-athletes and their resolution to the NCAA on an annual basis." https://www.ncaa.org/sports/2020/5/19/concussion-reporting-process.aspx. The irony that medical information regarding concussions suffered by women athletes must be reported to the NCAA, but that the concussion risk factor of facing a male in competition or at practice has never been required to be disclosed to female student-athletes is apparently lost on the

NCAA.[4] But the Court should recognize that sex-verification can be required to ensure equal opportunity and protect the safety of female student-athletes.

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[4] Greater leg strength and jumping ability of men confers a male advantage in volleyball relevant to injury risk. Research on elite national volleyball players demonstrates that on average, males exhibit a 50% greater vertical jump height during an "attack jump" than females. Men spike volleyballs with higher velocity than women, with a performance advantage in the range of 29–34%. A volleyball (with fixed mass) struck by a male and traveling an average 35% faster than one struck by a female, will deliver 82% more energy to a head upon impact. Due to men's significant performance advantages, the women's net in college volleyball is 5 5/8 inches lower than the men's net, i.e., 7 feet, 4 1/8 inches (2.24 meters) compared to 7 feet, 11 5/8 inches (2.43 meters). The combination of innate male performance advantages, along with the lower net height in women's volleyball, means that if a reasonably athletic male is permitted to compete against women, the participating female players will be exposed to higher ball velocities that are outside the range of those typically seen in women's volleyball thereby increasing their injury risk. *See generally* Dr. Chad Thomas Charlson, Expert Report on Lack of Fitness of Purpose of the NCAA Transgender Eligibility Policies in Women's Sports Including Women's Volleyball, November 15, 2024 (available at *Slusser v. Mountain W. Conf.*, No. 1:24-CV-03155-SKC-MDB, ECF No. 14-1 at 467–503).

C. Weight Limit Sports

Of course, weight-limited high school and college sports, such as wrestling, require weigh-ins that record an athlete's weight prior to every competition. *See*, *e.g.*, https://ncaaorg.s3.amazonaws.com/championships/sports/wrestling/d1/men/2024-25D1MWR_PreChampsManual.pdf (Section 1.5, Rule 9.1.1 Weigh-Ins).

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As these examples reflect, there is no compelling reason for scholastic sports organizations to resist simple non-intrusive sex-screening procedures to ensure women's equal opportunities, including their physical safety and right to privacy, are protected as required by Title IX. Given the same scholastic sports organizations regularly compel student athletes to provide bodily fluids and private health information for eligibility screening, there is no excuse not to implement sex-verification-screening in scholastic sports. *A fortiori* it was reasonable for the Idaho Legislature to protect female athletes in Idaho by requiring sex-verification before student-athletes compete in women's sports.

The Court should make clear that sex-verification-screening for eligibility to participate in women's sports is permissible and necessary, and, when women's equal opportunities are at stake, required by Title IX.

IV. Sex-Verification-Screening is Simple, Non-Intrusive and Accurate

A. The Rationale for Sex Verification Screening in Scholastic Sport Subject to Title IX

Most schools subject to Title IX consciously choose to maintain separate men's and women's varsity sports teams in recognition of Title IX's equal opportunity mandate in scholastic sports. Such sex-separation is encouraged by the Title IX athletics regulation which authorize "separate teams for members of each sex" in sports requiring "competitive skill" and/or in sports which, due to collisions or "bodily contact," are considered a "contact sport." 34 C.F.R. § 106.41(b).

In fact, sex-separation is ubiquitous because it is understood to be the only way that women can achieve Title IX goals of equality on the basis of sex. Thus, at virtually all levels of sport, sex-separation is the norm and foundational to giving women equal opportunity. Peer reviewed scientific research confirms that because of the wide athletic performance gap favoring men over women sex-separation is essential for women to have access to athletic opportunities on terms akin to men. Sandbakk Ø, et al. Sex differences in world-record performance: the influence of sport discipline and competition duration. *Int. J, Sports Physiol. Perform*. 2018;13(1):2–8.

Nor can this performance gap be overcome by testosterone suppression or any other intervention, medical or otherwise. Wiik, Anna, et al., *Muscle*

Strength, Size, and Composition Following 12 Months of Gender-affirming Treatment in Transgender Individuals, 105(3), *J CLIN ENDOCRINOL METAB*, e805–e813, (March 2020), *at*: https://academic.oup.com/jcem. (accessed Mar. 14, 2024); Hilton, E.N., Lundberg, T., Transgender Women in the Female Category of Sport: Perspectives on Testosterone Suppression and Performance Advantage, 51 SPORTS MED., 199-214 (2021); Harper J, *et al.* How does hormone transition in transgender women change body composition, muscle strength and haemoglobin? Systematic review with a focus on the implications for sport participation, 55 *BRITISH JOURNAL OF SPORTS MEDICINE,* 865-872 (2021).

Without sex-separated teams, women would inevitably lose positions and titles to men with biologically programmed athletic advantage, and would face greater physical risks in many sports, forfeiting an equal opportunity to participate in scholastic sports on a similar footing to men and losing out on much of what sports have to offer. This makes sex-separated teams and sex-separated competitions essential to satisfying Title IX's equal opportunity mandate.

As a consequence, good faith compliance with Title IX requires that Title IX-covered institutions employ reasonable mechanisms to ensure that men are not depriving women of positions on women's sports teams, increasing the safety risks of female athletes, and lessening women's privacy, while appropriating from women opportunities for titles, records, scholarships, coaching assistance, camaraderie, recognition, accolades, and other

intrinsic benefits of participation in sport.

Due to the serious defects and inherent problems with other possible methods of sex-verification such as visual screening by coaches or doctors, birth certificates, or self-identification by athletes, as explained below, scientific sex-verification-screening is the gold standard for protecting women's opportunities in sports.

B. Sex-Verification-Screening Protects the Dignity and Privacy of Athletes

Analogous to weigh-ins in wrestling, sex-screening functions as a measurement tool: it identifies athletes who may have undergone male development and therefore could possess the male-specific structural and physiological advantages that the women's category is designed to exclude. Just as weigh-ins confirm whether wrestlers meet the eligibility criteria of their weight category, sex-screening confirms whether athletes meet the eligibility criteria of their sex category.

However, unlike a weigh-in in wrestling, where failure to meet the required weight standard renders the athlete immediately ineligible for competition, the results of a sex-screen act as a 'flag' for athletes who may be deemed eligible for the female category after further, individualized assessment. Weigh-in acts as a 'test;' sex-screens act as a 'screen' to identify a refined cohort for formal testing. It is the outcome of this formal testing – for example, medical testing to understand whether the athlete has a particular medical condition that has affected development of

their sexual characteristics – that informs an assessment of eligibility.

Also, unlike a weigh-in in wrestling, a sex-screen measures a stable aspect of an athlete's structural and physiological development (being male) and is a once-in-a-lifetime procedure (assuming the results are kept and accessible).

Whether acknowledged publicly or not, de facto sex-screening already exists in women's sport, yet the prevailing screening tool - visual assessment of an athlete who appears masculinized - is blunt, arbitrary, and ethically indefensible. Typically, scrutiny arises only after concerns are raised by fellow athletes, coaching staff, medical officials, or even the public, and the athlete may be subsequently required to submit to formal testing within a medical workflow.

Under an approach where scientific sex-verification-screening is not used, including in systems such as that maintained by the NCAA where only alterable birth certificates are the screening tool for eligibility in the female category, athletes may be directly, individually and perhaps publicly targeted, subjected to suspicion, and occasionally thrust into the media spotlight. The resulting consequences can be profound: humiliation, harassment, public opprobrium, and psychological harm. Failing to implement more robust and reliable sex-verification-screening not only violates student-athletes' dignity and privacy but also shows a less than fulsome regard for the wellbeing of female athletes by being less than optimally protective of their competitive opportunities while subjecting some women to undue suspicion

based solely on subjective physical appearance.

Given the above, it is necessary to consider more ethical, objective and scientific methods for determining eligibility for female sports. A pre-competition, cohort-wide screen offers greater protection of both dignity and privacy. Here, every athlete applying to the female category is screened, no athlete is individually targeted based on suspicions about their sex, and screening is conducted discreetly and ahead of any public competitive appearances (thus avoiding any "last-minute dropouts" that arouse suspicion for a variety of reasons, not least possible doping). Tucker R., Hilton EN, et al., Fair and Safe Eligibility Criteria for Women's Sport, 34(8) *SCAND J MED. SCI. SPORTS*, e14715 (Aug 2024).

However, it is clearly impractical to submit entire cohorts of female athletes for formal medical testing to assess sexual development and the potential for male athletic advantage. While such medical testing is necessary to diagnose, for example, medical conditions that affect sexual development, it is lengthy, potentially invasive (involving intimate examination and scanning of internal organs) and expensive. It would represent an unnecessary burden to the near-100% of female athletes whose results would be entirely unremarkable.

A practical cohort-wide sex-screening tool is for genes involved in male-specific sexual development such as the *SRY* gene. Such screening is easily applied to large cohorts and provides a robust means to "sieve out" the near-100% of female athletes whose development is unremarkably female-typical from

those athletes who have the potential for male development, and for whom further investigation is required, not just for eligibility purposes but as a tool to assess general, lifelong health.

C. Sex-Verification-Screening Targeting *SRY* is Based on Peer-Reviewed Science

1. The Role of the *SRY* Gene in Male Development

Male development begins around six weeks gestation with differentiation of the bipotential gonads into testes, which nurture spermatogonia that will later mature into sperm to confer male fertility. The testes are the primary source of a male-specific hormone profile, including anti-Müllerian hormone (AMH) and testosterone, which orchestrate the development of internal and external genitalia. AMH causes regression of the paramesonephric (Müllerian) ducts, preventing formation of female internal structures such as the fallopian tubes, uterus, and upper vagina. Testosterone promotes development of the mesonephric (Wolffian) ducts into male internal genitalia, including the epididymis, vas deferens, and seminal vesicles. In the genital tubercle, labioscrotal folds, and urogenital sinus, local conversion of testosterone into dihydrotestosterone (DHT) drives masculinization of the prostate, penis, scrotum, and urethra, establishing the male external genitalia.

Testosterone produced by the testes impacts male development at three stages of life: first, in utero, to drive anatomical development, and correlated with

greater structural metrics in male fetuses; second, post-birth, where it is hypothesized to prime sexual function at maturity, and correlated with body composition during pre-puberty life, and; third, during puberty, where it drives massive divergence of male and female secondary sexual characteristics. It is lifelong male development, not just pubertal development, that underpins the need for sex categories in sport. In fact, it is increasingly evident that pre-puberty sex differences are associated with competitive advantage.

The cascade of male development is set in motion by the *SRY* gene, located on the Y chromosome. *SRY* encodes a transcription factor that triggers male development, starting with the push of bipotential gonads – that could become testes or ovaries – into a male developmental trajectory, where it is the effects of testes-derived hormones that build male advantage in sports. This single step is near decisive. It is uncontroversial that the developmental output of *SRY* activity – that is, to establish functional testes – requires a healthy 'orchestra' of genes and proteins. Developmental pathways are complex. It is equally uncontroversial that *SRY* **is** the conductor. *SRY* is routinely described as the "make male" "master switch."

And from this foundation – the making of a male – the testes produce the hormones that masculinize both internal and external genitalia and drive male characteristics that are relevant for sport.

2. *SRY* Gene Detection is a Robust Screening Mechanism

Given the central role of *SRY* in initiating the cascade of male development, detecting the presence of this gene provides a direct and scientifically rational way to flag individuals with the potential for male-specific physiological characteristics. Because *SRY* expression is the first and decisive step in establishing testes and the associated hormone profile, its presence reliably signals the biological pathway that underpins male development. Screening for *SRY* is therefore a logical, evidence-based approach to identify athletes who may develop male advantages, without immediately resorting to invasive or more complex diagnostic testing.

a. Available methods to detect the *SRY* gene

Any tissue/cell collection method that yields cellular material is suitable for *SRY* analysis. Viable sources include buccal (cheek) swabs, saliva, urine, and blood spots, from which cellular DNA can be extracted using standard laboratory protocols.

Conventional Polymerase Chain Reaction (PCR) provides a robust, rapid, and cost-effective method for determining the presence or absence of *SRY*. The Nobel-prize winning method can amplify a gene of interest (in this case, *SRY)* over a time of around two hours and permit a user to detect its presence (or absence) in an input sample via standard DNA detection methods. Equipment requirements are minimal, reagents are inexpensive, and assay

execution is straightforward with minimal technical training. Reagent costs are modest, less than $1 per sample, and turnaround time from DNA extraction to result is rapid, making PCR highly suitable as a first-line screen.

PCR is the optimal screening approach, providing rapid, robust, and cost-effective determination of *SRY* presence or absence. An 'absent' result, as would be the case for almost all athletes screened, boarders on near-certainty sensitivity (that is, all *SRY*-negative tests, conducted within approved laboratories according to standardized protocols, should be considered as unremarkable). And the method identifies, after confirmation (for example, by repeating assays for positive samples, preferably with a second sample preparation), athletes who would benefit from medical testing**.**

b. Practical considerations

PCR assays for the *SRY* gene have been extensively validated in clinical and research settings. These assays are, as explained below, widely accepted in sport and their application and use is not controversial. These assays achieve analytical sensitivity and specificity approaching 99.9%, limited primarily by sample integrity. In clinically certified laboratories, such as those accredited under CLIA or equivalent standards, false positives are exceedingly rare. High-quality reagents (for example, standardized reagents and workflows for PCR setup, batching, and sample handling further ensure the integrity and reproducibility of results).

Additional safeguards, such as those employed by the World Anti-Doping Agency for sports drug testing, like repeat testing on independently extracted aliquots, protocols for replication and confirmatory evidence, can ensure that positive results reflect true *SRY* signals. Under these conditions, conventional PCR is a highly robust and reliable first-line screening tool.

In summary, confidential, laboratory-based *SRY*-screening identifies potential male developmental pathways in a neutral, objective, non-invasive and ethically responsible manner. By detecting student-athletes seeking to compete in women's sports but who have potential male developmental pathways prior to public competition, this approach protects athletes' privacy, reduces stigma, and ensures that any further evaluation is conducted in a private, individualized, and proportionate way, preserving both the integrity of competition and the rights and dignity of all athletes.

3. Detection of the *SRY* Gene Should Lead to An Opportunity for Confirmatory Evaluation

While *SRY* is the primary determinant of male development, its presence is not an absolute predictor of fully masculinized testes or male-typical physiology. Rare Disorders (or Differences) of Sex Development (DSDs) illustrate situations in which *SRY* presence fails to drive standard male differentiation, or where downstream pathways are disrupted. In those rare cases in which an athlete seeking to compete on a

women's team possesses an *SRY* gene, they should be given the opportunity to demonstrate with physical evidence from their physician or through established medical workflows that they do not have male physical development because they have experienced a DSD which has caused their body to either not produce testosterone or to not respond to testosterone and other androgens and thus have not experienced male physiological and/or structural development.

Examples of such DSDs, which are exceedingly rare, include Swyer Syndrome (46,XY Complete Gonadal Dysgenesis) in which individuals carry a Y chromosome with an intact *SRY* gene but fail to develop functional testes. In this condition, external genitalia of these individuals appear unambiguously female at birth, and they are recorded as female babies, despite possessing *SRY*. Importantly, without functional testes, these individuals cannot experience the testosterone-driven male development that concerns most sports federations.

Another example of a DSD in which there is no male physiological development is Complete Androgen Insensitivity Syndromes (CAIS). In CAIS *SRY*-driven testes may form and produce testosterone, but mutations in the androgen receptor prevent target tissues from responding to testosterone and DHT. The result is an individual who appears unambiguously female at birth, despite normal *SRY* expression, testes differentiation and testicular hormone production.

These examples demonstrate that *SRY* presence alone is not sufficient to guarantee male-typical physiological and structural development that

is relevant for sports. The downstream signalling cascade is essential for the manifestation of male physiological characteristics. Consequently, while *SRY*-screening reliably identifies individuals with the potential for male development, it must be interpreted in the context of rare DSDs that disrupt the normal pathway. Positive *SRY* results should therefore be considered probabilistic rather than absolute and warrant confirmatory evaluation in cases where atypical development is suspected. That is, *SRY* screening is a 'screen,' not a test or diagnosis.

While some extremely rare DSDs do not result in male physical development, other DSDs impact primarily the external male genitalia at birth but ultimately allow for fully masculinized development.

For example, the rare enzymatic defects 5-alpha-reductase type 2 deficiency and 17ß-hydroxysteroid dehydrogenase deficiency impair the conversion of testosterone to DHT or the final steps of testosterone synthesis. Individuals who experience this condition have testes and produce testosterone, but they generate insufficient DHT which prevents full masculinization of the external genitalia at birth. Therefore, in some cases these individuals may be observed as, and raised as, female but virilize at puberty.

While the *SRY* gene is the primary driver of male gonadal development, its presence does not guarantee fully male-typical physiology in every case. Rare conditions, such as complete androgen insensitivity syndrome (CAIS), can disrupt downstream hormone production or androgen

signalling, resulting in individuals with *SRY* and perhaps even testes, but who do not experience masculinization (i.e., the development of male body structure) and who therefore do not acquire male sports advantage. *SRY*-screening provides a highly reliable but not absolute indication of male developmental potential, and positive screening results should be interpreted with the understanding that rare conditions exist which would permit objective classification of the individual in the female category.

Accordingly, in the sports sex-verification-screening programs which use *SRY*-screening if the screening test detects *SRY*, this result does not automatically bar the athlete from competition. Instead, athletes with positive *SRY*-screening results are referred for further, confidential, evaluation. The positive *SRY*-screening result triggers a stepwise, private assessment involving further molecular and medical evaluation, consistent with ethical guidelines and informed consent standards. This typically includes repeat molecular testing, hormone profiling, and individualized medical consultation to evaluate downstream physiological development. The goal is to determine whether male-specific developmental pathways may confer performance advantages, while ensuring that assessments are proportionate, evidence-based, and conducted with strict confidentiality.

V. The Successful Use of Sex-Verification-Screening in Sport

A. World Athletics and World Boxing

Two international sports federations, World Athletics and World Boxing, have formal policies requiring athletes seeking to compete in the female category to undergo a one-time *SRY*-screen for the purposes of eligibility assessment. *See* World Athletics Eligibility Rule 3.5 and Regulation C3.5A, *at*: https://worldathletics.org/about-iaaf/documents/book-of-rules; World Boxing Sex Eligibility Policy, *at*: https://worldboxing.org/wp-content/uploads/2025/08/World-Boxing-Sex-Eligibility-Policy_FINAL_20Aug25.pdf.

Both federations employ PCR-based molecular assays performed on small, non-invasive samples such as blood spots, providing rapid and highly reliable detection of the *SRY* gene. In each case, the test serves as a preliminary screen: it does not, by itself, determine eligibility, but identifies athletes who may have undergone male developmental pathways and could possess male-specific physiological advantages. Athletes with negative results (which, for this assay, almost certainly represents the absence of potential male development) are immediately eligible to compete in the female category. Athletes with positive results are referred for further, confidential evaluation conducted in accordance with established ethical standards. Dr. Hilton is aware that World Athletics has explicated a single 46, XY DSD – CAIS – where athletes remain eligible for the female category, despite possessing the *SRY* gene. She has also argued

the exemption to exclusion should also include 46, XY Complete Gonadal Agenesis.

By integrating molecular screening into their procedural frameworks, both federations demonstrate how scientifically grounded, minimally invasive, and ethically managed measures can be used to protect fairness in female competition.

Cohort-based *SRY*-screening provides an objective, scientifically validated measure of male developmental potential, while confirmatory and individualized assessments ensure that negative eligibility decisions are proportionate and evidence-based. By conducting testing and evaluation confidentially, before any public competition, these federations will protect athletes from stigma and intrusion, avoiding the harms associated with historical appearance-based or ad hoc policies. In this way, molecular screening, confirmatory testing, and ethical oversight establish a transparent, defensible, and respectful framework for female-category participation.

B. *SRY*-Screening at the 1996 Olympic Games

At the 1996 Atlanta Olympics the International Olympic Committee (IOC) mandated sex-verification-screening for all female athletes. More than 3,300 competitors were required to undergo genetic screening, using PCR amplification of the *SRY* gene. In effect, this was a *whole-cohort molecular screen*, similar in many respects to the policies now used by World Athletics and World Boxing. However, the IOC

made several procedural mistakes in the implementation of this policy which eventually resulted in criticism.

The Atlanta protocol worked in two stages. First, all samples were screened for the presence of the *SRY* gene. Second, any positive results were subject to individualized case review to determine eligibility. As explained above, this two-step model - screen, then refer - remains the gold standard for balancing scientific rigor with proportionate decision-making.

Indeed, the Atlanta Games demonstrated the robustness and sensitivity of this approach: eight athletes in the female category tested positive for *SRY*, yet on closer examination all were cleared to compete. One case would now be excluded under the new World Athletics policy, reflecting improved medical and scientific understanding of the condition – 5ARD – and its role in male-pattern development relevant for sports. The remaining cases were conditions of androgen insensitivity in which *SRY* initiates testes formation but androgen signalling is compromised, preventing the full development of male-typical physiological and/or structural development.

In terms of methodology, the Atlanta screen resembled the modern cohort-based *SRY*-screening currently used by World Athletics and World Boxing: it was objective, rapid for the era, and did not rely on targeting individual athletes based on appearance or suspicion.

The limitations of the program at the Atlanta Olympics lay not in the science but in the *framework*

of implementation. Privacy protections were less robust than current standards, and "track side" testing (i.e., testing after athletes had already arrived at the event) resulted in athletes who mysteriously disappeared from competition and were, as result, subjected to media scrutiny. These procedural mistakes - rather than any flaw in the molecular method - led the IOC to abandon sex-screening after Atlanta, replacing it with concurrent suspicion-based evaluations and testosterone-based eligibility thresholds, which have their own limitations and are potentially subject to manipulation.

The 1996 Atlanta Olympic Games laboratory processing achieved a mean turnaround time of approximately 22 hours, allowing results to be obtained rapidly for all 3,387 female athletes. Although the screening program was expensive, the confidential handling of results ensured that individual athletes were not publicly identified, mitigating the risk of stigma or humiliation. Positive cases - eight athletes identified with *SRY* - were managed through discreet follow-up and eligibility assessment, confirming that a structured, scientifically grounded, and ethically administered protocol can uphold both fairness in competition and respect for athlete privacy.

Building on the Atlanta model, modern *SRY*-screening leverages advances in molecular diagnostics to achieve the same scientific rigor and ethical safeguards at dramatically lower cost and faster turnaround. Using PCR-based assays on 384-well plates, laboratories can now screen thousands of athletes within 24 hours for a fraction of the historical

expense. As in 1996, results are handled confidentially, with positive findings triggering repeat testing and, if necessary, further clinical evaluation before any eligibility decision is made. This approach preserves the core benefits of the Atlanta protocol - rapid, accurate, and discreet identification of potential male development - while exploiting lower financial and logistical burdens, demonstrating that robust, ethical cohort-based screening is now – if, according to some commentators, it was not before – feasible and efficient in contemporary sport.

In hindsight, Atlanta 1996 illustrates the feasibility of molecular screening. Scientifically, the protocol anticipated modern practice: whole-cohort screening, detection of anomalies, referral for confidential review, and eligibility decisions based on context. Procedurally, however, the execution subjected athletes to undue suspicion based on the timing of the screening and follow-up testing and evaluation. The lessons of Atlanta therefore underscore a critical point: science can deliver accurate, proportionate screening, but it must be embedded within policies that prioritize athlete dignity.

C. Nike Indoor Nationals

It is further noteworthy that the basic protocol for sex-verification-screening recommended by *amici* in this brief, although currently being resisted by college sports organizations including the NCAA, is now being implemented in the United States at the Nike Outdoor Nationals, the high school national championship track and field meet organized by the

National Scholastic Athletics Foundation (NSAF) and sanctioned by USA Track & Field, the U.S. national governing body for track and field. https://www.runnerspace.com/eprofile.php?event_id=14188&do=news&news_id=672074.

The NSAF Eligibility Policy for the Female Category provides that "participation in the female category be limited to those born with female reproductive biology and genetics." https://nikeoutdoornationals.runnerspace.com/eprofile.php?event_id=14188&do=title&title_id=731&page_id=16831&folder_id=1220. The policy specifies that confirmation that an athlete qualifies for the female category will be accomplished in various ways depending on the competitive level of sport and other factors. Significantly, under this policy as well the athlete can be required to provide a cheek swab for SRY-screening and can be required to undergo further medical review. The only instance in which an athlete with XY chromosomes may compete in the female category is if they have CAIS, meaning their body has no capacity to respond to testosterone or other androgens and they therefore have not experienced testosterone driven male development.

Given that high school competitors in track and field national championships in the United States are subject to *SRY*-sex-verification-screening and follow up analysis to address rare instances of DSDs that result in complete inability to experience male androgenization, there is no valid reason that scholastic sports athletic associations and conferences, including the NCAA and its member conferences, high school athletic associations, and high schools, colleges

and universities cannot be reasonably expected to implement sex-verification-screening programs to protect female athletes.

CONCLUSION

Both lower courts in *Hecox* misunderstood sex-verification-screening which is an important tool for protecting women's equal opportunities in sport. This case presents an excellent opportunity for the Court to say so and make clear that Title IX requires the implementation of reasonable practices to protect women's equal opportunities in scholastic sports.

Respectfully submitted,

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Counsel for Amicus Curiae, Emma Hilton, PhD and the International Consortium for Female Sport

September 19, 2025

APPENDIX

APPENDIX TABLE OF CONTENTS

Emma HILTON
Curriculum vitae

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ORCID: 0000-0002-3750-577X

Full name

Emma Niamh HILTON

Education and qualifications

Ph.D. Developmental Biology, University of Warwick, UK. Awarded 2004.

Research: Characterisation of a gene regulatory mechanism that integrates embryonic signalling pathways to promote differentiation of the back/head organiser of early vertebrates.

B.Sc. (Honours) Biochemistry, University of Warwick, UK. Awarded 1999.

Research: Identification of a cause of Sotos syndrome, a genetic disorder featuring prenatal and childhood bone overgrowth, precocious peak height velocity and concurrent advanced bone age.

Roles

04/2019 - present
Postdoctoral Research Fellow, Infection, Immunity & Respiratory Medicine, University of Manchester, UK.

Funders: BBSRC; NC3Rs; Cystic Fibrosis Foundation.
Research: Tadpole skin development from stem cells to a functional mucociliary barrier, as a model for cystic fibrosis.
Teaching: Genetic disorders and population screening; sex hormones and development.
Supervision: Undergraduate project students and Masters research students.

01/2014 - 04/2019
Research Fellow, Genetic Medicine, University of Manchester, UK.
Funders: MRC; Newlife.
Research: Peripheral nerve development, skeletal/smooth muscle function and urogenital development in mammals, as a model for urofacial syndrome.

01/2010 - 01/2014
Stepping Stone Research Fellow, Genetic Medicine, University of Manchester, UK.
Funder: University of Manchester.
Research: Eye development and disease, as a model for sex-linked craniofacial syndromes.

06/2003 - 12/2009
Postdoctoral research associate, Genetic Medicine, University of Manchester, UK.
Funder: MRC.
Research: Role of an embryonic signalling pathway in eye development and internal organ laterality; Early segmentation of the developing vertebral column and

associated skeletal muscle; Identification of genetic causes of urofacial syndrome.

Professional memberships
British Society for Developmental Biology

Publications (bold: most relevant to this submission)

Google Scholar: Citations 1874; h-index 18; i10-index 22

Scopus (ID 18437250900): Citations 1209; h-index 15; FWCI 5.42 (where 1 is normalised average)

Hilton, E.N. and Bracewell, J. Sex screening, the need for a sex screening agency and female categories of sport. In preparation, Int Sports Law J. In preparation.

Pike, J. and Hilton, E. (2025). Sex, fairness and the World Athletics regulations. JPS. July;1-18.

Tucker, R., Hilton, E.N., McGawley, K. et al. (2024). Reply to Williams et al. "Fair and safe eligibility criteria for women's sport." Scand J Med Sci Sports. 34:e14754.

Dubaissi, E. and Hilton, E.N. et al. (2024). The Tmem16a chloride channel is required for mucin maturation after secretion from goblet-like cells in the *Xenopus tropicalis* tadpole skin. Sci Rep. 14:25555.

Tucker, R., Hilton, E.N., McGawley, K. et al. (2024). Fair and safe eligibility criteria for women's sport. Scand J Med Sci Sports.

34:e14715.

Lundberg, T.R., Tucker, R., McGawley, K. et al. (2024). The International Olympic Committee framework on fairness, inclusion and nondiscrimination on the basis of gender identity and sex variations does not protect fairness for female athletes. Scand J Med Sci Sports. 34:e14581.

Hilton, E.N. and Lundberg, T.R. (2023). Authors' reply to Hamilton et al. "Transgender women in the female category of sport: perspectives on testosterone suppression and performance advantage." Sports Med. 54:243-246.

Book chapter: Hilton, E.N. and Wright, C. (2023). "Two sexes." In Sex and Gender: A Contemporary Reader. Routledge, Oxford, UK.

Hindi, E., Williams, C., Zeef., L. et al. (2021). Experimental long-term diabetes mellitus alters the transcriptome and biomechanical properties of the rat urinary bladder. Sci Rep. 11:1-16.

Hilton, E., Thompson, P., Wright, C. et al. (2021). The Reality of Sex. Ir J Med Sci. 190: 1647-1647.

Hilton, E. and Lundberg, T. (2020). Transgender women in the female category of sport: perspectives on testosterone suppression and performance advantage. Sports Med. 51:199-214.

Roberts, N.A., Hilton, E.N., Lopes, F. et al. (2019). Lrig2 and Hpse2, mutated in urofacial syndrome,

pattern nerves in the urinary bladder. Kidney Int. 95:1138-1152.

Roberts, N.A., Hilton, E.N., and Woolf, A.S. (2016). From gene discovery to new biological mechanisms: heparanases and congenital urinary bladder disease. Nephrol Dial Transplant. 31:534-540.

Stuart, H.M., Roberts, N.A., Hilton, E.N. et al. (2015). Urinary tract effects of HPSE2 mutations. J Am Soc Nephrol. 26:797-804.

Roberts, N., Woolf, A. S., Stuart, H. et al. (2014). Heparanase 2, mutated in urofacial syndrome, mediates peripheral neural development in Xenopus. Hum Mol Genet 23:4302-4314.

Hilton, E., Black, G.C.M. and Bardwell, V. (2013). "BCOR and oculofaciocardiodental syndrome." Epstein's Inborn Errors of Development: The Molecular Basis of Clinical Disorders of Morphogenesis. Oxford University Press, Oxford, UK.

Woolf, A.S., Stuart, H.M., Roberts, N.A. et al. (2013). Urofacial syndrome: a genetic and congenital disease of aberrant urinary bladder innervation. Pediatr Nephrol. 29:513-518.

Stuart H.M., Roberts, N.A. et al. (2013). LRIG2 mutations cause urofacial syndrome. Am J Hum Genet. 92:259-264.

Maher, G.J., Hilton, E.N., Urquhart, J.E. et al. (2011). The cataract-associated protein TMEM114, and TMEM235, are glycosylated transmembrane proteins

that are distinct from claudin family members. FEBS Lett 585:2187-2192.

Banka, S., Walter, J., Aziz, M. et al. (2011). Identification and characterisation of a novel inborn error of metabolism caused by dihydrofolate reductase deficiency. Am J Hum Genet. 88:216-225.

Briggs, T.A., Rice, G.I., Daly, S. et al. (2011). Tartrate-resistant acid phosphatase deficiency causes a bone dysplasia with autoimmunity and a type I interferon expression signature. Nat Genet 43:127-131.

Daly, S.B., Urquhart, J.E., Hilton, E. et al. (2010). Mutations in HPSE2 cause urofacial syndrome. Am J Hum Genet. 86:963-969.

Hilton, E.N., Johnston, J., Whalen, S. et al. (2009). BCOR analysis in patients with OFCD and Lenz microphthalmia syndromes, mental retardation with ocular anomalies, and cardiac laterality defects. Eur J Hum Genet 17:1325-1335.

Hanson, D., Murray, P.G., Sud, A. et al. (2009). The primordial growth disorder 3-M syndrome connects ubiquitination to the cytoskeletal adaptor OBSL1. Am J Hum Genet 84:801-806.

Tassabehji, M., Fang, Z., Hilton, E.N. et al. (2008). Mutations in GDF6/BMP13 are associated with vertebral segmentation defects in Klippel-Feil syndrome. Hum Mutat 29:1017-1027.

Hilton E.N., Black, G.C., Manson, F.D. et al. (2007). De novo mutation in the BIGH3/TGFB1 gene causing

granular corneal dystrophy. Br J Ophthalmol 91:1083-1084.

Hilton, E.N., Manson, F.D., Urquhart, J.E. et al. (2007). Left-sided embryonic expression of the BCL-6 corepressor, BCOR, is required for vertebrate laterality determination. Hum Mol Genet 16:1773-1782.

Hilton, E.N., Rex, M. and Old, R. (2003). VegT activation of the early zygotic gene Xnr5 requires lifting of Tcf-mediated repression in the Xenopus blastula. Mech Dev 120:1127-1138.

Rex, M., Hilton, E.N. and Old, R. (2002). Multiple interactions between maternally-activated signalling pathways control Xenopus nodal-related genes. Int J Dev Biol 46:217-226.

Grant income

2016-2018
Newlife (£115,735).
Towards novel therapies for an inherited congenital neuropathy affecting the urinary bladder. Woolf, Newman, Kimber, Hilton (Co-app).

2014-2016

MRC (£507,695).
Molecular bases of congenital bladder diseases.
Woolf, Newman, Gardiner, Hilton (Research Co-I).

2010-2013
KRUK (£180,000).
Urofacial syndrome (UFS): a novel genetic model to

understand human renal tract function and malformation.
Newman, Woolf, McKenzie, Hilton (Co-app).

2010-2014
University of Manchester (£salary + £40,000 project costs).
Xenopus as a model organism for human development and disease.
Hilton (Stepping Stone Fellowship Award).

2008-2010
Newlife (£100,000).
The role of BCL-6 corepressor-modulated TGFß signalling in MCOPS2 and other microphthalmia syndromes.
Black, Manson, Hilton (Co-applicant).

Impact statement
Overview

I am a developmental biologist – the study of how bodies develop and grow – at the University of Manchester, UK. My research has encompassed a range of genetic conditions impacting various body systems, including sex-specific disorders and neuromuscular or skeletal disorders. In 2007, I was named as an Outstanding Young Investigator by the European Society of Human Genetics for my research on a sex-linked genetic disorder that is lethal in male fetuses. I teach undergraduate medical students about genetic disorders and gene screening protocols.

Alongside my primary research, my academic work on sex and development is increasingly-recognised. For

example, in 2021, I was invited to write for the Royal Academy of Medicine in Ireland, where I argued that "human sex is an observable, immutable, and important biological classification." In 2023, I was invited as lead author of an academic textbook chapter on the evolution of sex, human reproductive development and critiquing emerging misinformation about the phenomenon of sex. For information, the chapter text is attached in Appendix E, as it represents my longest exposition to date on the subject of sex. I have been invited as lead author of an academic textbook chapter on disorders of sex development (DSDs) and coauthor of a chapter on female categories in sport, to be published in 2025. Within my institute, I teach undergraduate life sciences students on sex development and the long-term effects of sex hormones on the development of the human body.

Publication impact

I have conducted research and analysis on sex in sport. Four papers will be highly relevant to this report.

The first key publication is **Hilton and Lundberg, 2020. Transgender Women in the Female Category of Sport: Perspectives on Testosterone Suppression and Performance Advantage. Sports Med. 51:199-214.**

Summary: The article examines the biological differences between males and females in sports performance and evaluates whether testosterone suppression in transgender women eliminates the male performance advantage. Males generally enjoy a

performance advantage over females due to physical differences, particularly after puberty, with performance gaps ranging from 10-50%, depending on the sport. At the time of publication, the International Olympic Committee (IOC) recommended that transgender women can compete in the female category if their testosterone levels are suppressed below 10 nmol/L for at least 12 months. However, existing studies show that testosterone suppression leads to only modest reductions in muscle mass and strength—approximately 5% after 12 months—leaving a significant portion of the male advantage intact. The findings suggest that current policies may not fully ensure fair and safe competition, and sports organisations are encouraged to reconsider their guidelines considering this evidence.

Hilton and Lundberg (2020) is a review of evidence informing the unproven position that testosterone suppression in transgender women (who are biologically male) secures fairness and safety for female athletes.[1] The impact is ranked #585 out of 28.9 million academic articles published across all fields, and we have been extensively cited in the academic literature and the scientific media (Altmetric; 4th August 2025).[2] Our review has been cited in: the transgender athlete policies of British Triathlon,[3]

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[1] https://link.springer.com/article/10.1007/s40279-020-01389-3

[2] https://link.altmetric.com/details/95647691

[3] https://www.britishtriathlon.org/britain/documents/about/edi/transgender-policy-effective-from-01-jan-

British Cycling,[4] Badminton England,[5] British Rowing,[6] Swim England,[7] Pentathlon GB,[8] the Professional Disc Golf Association,[9] British Fencing,[10] World Rugby[11] (subsequently, those of UK domestic federations), Union Cycliste Internationale[12] and World Athletics (subsequently, those of UK domestic

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2023.pdf

[4] https://www.britishcycling.org.uk/zuvvi/media/Transgender_and_Non-Binary_Policy_-_FAQs.pdf

[5] https://www.badmintonengland.co.uk/wp-content/uploads/2023/08/Transgender-policy-Final.pdf

[6] https://www.britishrowing.org/wp-content/uploads/2023/08/British-Rowing-Transgender-and-Non-Binary-Competition-Eligibility-Policy.pdf

[7] https://www.swimming.org/swimengland/swim-england-transgender-non-binary-competition-policy/

[8] https://www.pentathlongb.org/policies/draft-pgb-transgender-policy-september-2023.pdf

[9] https://www.pdga.com/announcements/pdga-board-directors-statement-update-pdga-policy-eligibility-gender-based-divisions

[10] https://www.britishfencing.com/wp-content/uploads/2024/09/Gender-Policies-for-Licensed-Events-Approved-18.09.2024.pdf

[11] https://www.world.rugby/the-game/player-welfare/guidelines/transgender/faqs

[12] https://assets.ctfassets.net/761l7gh5x5an/4gHOE5EpVItQux9kf39XYC/5c52616af086bdf2c9731679f213c1cd

federations);[13] the current UK Sports Council Equality Group policy document, and subsequently, multiple UK sports federations;[14] the current British Association of Sports and Exercise Sciences Expert Statement.[15] Further afield, we have been cited in: the US Court of Appeals for the 11th Circuit;[16] a UK Parliamentary Office of Science and Technology literature review;[17] a UN report on violence against women and girls in sport.[18]

The second key publication is **Lundberg et al., 2024. The International Olympic Committee framework on fairness, inclusion and nondiscrimination on the basis of gender identity and sex variations does not protect fairness for female athletes. Scand J Med Sci Sports. 34:e14581.**

Summary: We critique the International Olympic Committee's (IOC) recent framework on fairness,

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[13] Not publicly available.

[14] https://www.uksport.gov.uk/news/2021/09/30/transgender-inclusion-in-domestic-sport

[15] https://www.bases.org.uk/imgs/8931_bas_bases_tses_summer_2021_online_pg_14_15742.pdf

[16] https://aboutblaw.com/6fe

[17] https://researchbriefings.files.parliament.uk/documents/POST-PN-0683/POST-PN-0683.pdf

[18] https://www.ohchr.org/en/documents/thematic-reports/a79325-report-special-rapporteur-violence-against-women-and-girls-its.

inclusion, and nondiscrimination regarding gender identity and sex variations. While acknowledging the IOC's effort to incorporate sports science and medicine, we challenge the claim that the framework aligns with existing evidence. Male development creates physical differences—such as greater muscle mass, strength, power, and endurance—that underpin male athletic advantage. These advantages are not eliminated by testosterone suppression, as transgender women retain significant physical benefits despite reduced testosterone levels. The IOC's "no presumption of advantage" principle disregards these realities. The concept of "meaningful competition" is flawed, as fairness in female categories is not about closely matched performance but about excluding male advantages to maintain fair competition. Case-by-case assessments for transgender athletes are impractical and stigmatising. We argue for eligibility criteria based on male development rather than current testosterone levels and emphasize the need to prioritise female athletes in decision-making.

The third key publication is **Tucker and Hilton et al., 2024. Fair and safe eligibility criteria for women's sport. Scand J Med Sci Sports. 34:e14715.**

Summary: In the wake of the Paris Olympic boxing scandal, we argue that sports federations are entitled to define eligibility criteria to exclude males from the female category of sport, and that a 'cheek swab test' offers a simple, non-invasive, first-line screen. We recommend medical follow-up for any unexpected results, as a matter of medical priority in apparently-

female athletes who may have an undetected disorder of sex development (DSD). We argue that cohort-wide screening preserves the privacy and dignity of individuals and represents an improvement on the current regime of targeted testing based on allegations and suspicions about named athletes.

The fourth key publication is **Pike and Hilton, 2025. Sex, fairness and the World Athletics regulations. JPS. July;1-18.**

Summary: We counter that arguments advocating for inclusion of Caster Semenya and other similarly-situated athletes (those with XY DSDs that involve male development relevant for categories in sport) are flawed, because they rest on the assumption that Semenya et al are female. Using a functional account of sex (as opposed to legal identifiers or personal identities), we argue these athletes are, in fact, biologically male, and are rightly deemed ineligible for female athletics.

Wider impact

I have disseminated my research findings widely, including: consultation with over 15 domestic and international sporting bodies seeking advice on policy formation (many such meetings have been held under conditions of anonymity); authoring a policy review by the Canadian Macdonald-Laurier Institute;[19] seminars and meetings with high-profile

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19 https://macdonaldlaurier.ca/files/pdf/Dec2021_Fair_game_Pike_Hilton_Howe_PAPER_FWeb.pdf.

administrators, including David Grevemberg (managing director of the Commonwealth Games Federation)[20] and at the Royal Academy of Medicine alongside Richard Budgett (then-medical director of the International Olympic Committee);[21] academic talks at the Canadian Academy of Sport and Exercise Medicine Annual Conference,[22] the 19th World Congress of the International Academy of Human Reproduction,[23] and the Lawn Tennis Association Sports Gynaecology Symposium 2024;[24] a private meeting at the UK House of Lords.

I am an advocate for fairness for female athletes, working with athlete groups like the US-based Women's Sports Policy Working Group[25] and the Independent Council on Women's Sport,[26] and I have spoken at various feminist and political meetings, including at a fringe meeting at the 2024 Labour Party

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[20] https://www.youtube.com/watch?v=TbE9aEo8ypA

[21] https://www.mededucare.com/_files/ugd/70d91e_b49fb63fc9574bac9ce9c34bfac298a9.pdf

[22] https://casem-acmse.org/wp-content/uploads/2020/02/ENG_CASEM-AQMSE-Quebec-2022-CASEM-AQMSE-1.pdf

[23] https://hr2023.humanrepacademy.org/scientific-program/

[24] https://www.lta.org.uk/news/second-uk-sports-gynaecology-conference-spotlights-female-athlete-health-and-performance/

[25] https://womenssportspolicy.org/

[26] https://www.iconswomen.com

Conference (I am a Labour Party member).[27] Since 2021, I have served as a board member and now trustee of Sex Matters, a UK human rights charity who advocate for clarity on the protected characteristic of sex in UK law.[28] Examples of my outputs for Sex Matters have included formal responses to sports policy consultations,[29] although my duties now cover general advice and input to resources produced by employees, and board-level decisions regarding strategy, expenditure, employment decisions and other administration. My position with Sex Matters is unpaid and my work is entirely voluntary; I receive reimbursement for travel, food and accommodation at meetings and events.

I have been cited by and interviewed in the UK mainstream media on several occasions, including an extensive interview for the BBC,[30] and on BBC Radio Newshour[31] and Inside Science[32]. I have published opinion pieces in the mainstream media, including the Wall Street Journal (on the harms arising from denial of the biological reality of sex)[33] and with Professor

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[27] https://labourwomensdeclaration.org.uk

[28] https://sex-matters.org

[29] For example: https://sex-matters.org/wp-content/uploads/2021/05/Sex-Matters-British-Cycling-policy-response.pdf

[30] https://www.bbc.co.uk/news/articles/crlr8gp813ko

[31] https://www.bbc.co.uk/sounds/play/w172x2z59b74d7v

[32] https://www.bbc.co.uk/programmes/m001np6v

[33] https://www.wsj.com/articles/the-dangerous-denial-of-sex-11581638089

David Handelsman, an international expert in the pharmacology of androgens and expert witness for World Athletics (on male development and retained athletic advantage).[34]

[34] https://amp.theaustralian.com.au/sport/what-science-tells-us-about-transgender-women-athletes/news-story/cb8b7a30f68745a3fa65442b7ff15694

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Identity Document Laws and Policies: Gender Markers on Birth Certificates

No updates required since June 16, 2025

What's in this document (click to jump to that section):

To receive regular updates, subscribe here: http://bit.ly/map-newsletter

To donate to support MAP's work tracking these policies, click here:
https://mapresearch.org/donate

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www.mapresearch.org/equality-maps/identity_documents. Accessed [Date of access].

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Background

Birth certificate laws govern the process by which a state changes (or refuses to change) a gender marker on a person's birth certificate. Many transgender people choose to revise the gender marker on their identity documents so that it matches the gender they live every day. Accurate and consistent gender markers on identity documents helps transgender people gain access to public spaces and resources, as well as dramatically reducing the risk they will face violence, discrimination, or harassment. For more information, see here.

Process categories and scoring system:

(1) State updates birth certificates using an administrative process with no medical documentation requirements

(0.75) State updates birth certificates using an administrative process and documentation of "appropriate treatment" (or similar language)

(0) State has unclear process regarding gender marker changes and/or unclear medical requirements that may be left to the discretion of individual judges

(-0.5) State updates birth certificates using an administrative process but requires proof of surgery

(-0.75) State updates birth certificates but requires both a court order and proof of surgery

(-1) State does not allow changing the gender marker on birth certificates at all

Option categories and scoring system:

(0.5) State allows individuals to mark M, F, or X on their birth certificate

(0) State only allows individuals to identify as male or female

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Equality Map & Additional Resources

- See our Equality Map: Birth Certificate Policies, which is updated and maintained in real time alongside this document.
- See our Equality Map: Driver's License Policies and Equality Map: Name Change Policies for related identity document policies.
- MAP's 2022 report *The ID Divide: How Barriers to ID Impact Different Communities and Affect Everyone*, detailing the ways that barriers to obtaining an accurate ID significantly impact people's ability to move through their daily lives and how these obstacles harm specific communities.
    - See the related Fact Sheet: Identity Documents & Transgender and Nonbinary Communities (updated March 2025; originally published 2022)
- For more information about each state's process and requirements, see also the Advocates for Transgender Equality (A4TE, formerly known as NCTE and TLDEF) ID Documents Center.
- See the CDC's National Center for Health Statistics "Where to Write for Vital Records" for links to the relevant agencies in all 50 states, D.C., and five U.S. territories.

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Summary Tables

Table 1: Summary Matching the Map

Category	States	
State updates birth certificates using an administrative process with no medical documentation requirements *(14 states)*	California Idaho Illinois Maine Massachusetts Michigan Nevada	New Jersey New Mexico New York Oregon Rhode Island Vermont Washington
State updates birth certificates using an administrative process and documentation of "appropriate treatment" (or similar language) *(11 states, D.C., + 1 territory)*	Alaska Colorado Connecticut Delaware District of Columbia Hawaii	Maryland Minnesota North Carolina Pennsylvania Puerto Rico Virginia West Virginia
State has unclear process and/or unclear medical requirements left to the discretion of individual judges *(6 states + 3 territories)*	*Unclear process:* American Samoa South Carolina South Dakota U.S. Virgin Islands	*Court order but unclear medical requirements:* Mississippi New Hampshire Northern Mariana Islands Ohio Utah
State updates birth certificates using an administrative process but requires proof of surgery *(3 states)*	Arizona Kentucky Nebraska	
State updates birth certificates but requires both a court order and proof of surgery *(8 states + 1 territory)*	Alabama Arkansas Georgia Guam Louisiana Missouri North Dakota Wisconsin Wyoming	
States that do not allow for updating the gender marker on a birth certificate at all *(8 states)*	**Florida** **Indiana** **Iowa – though not in effect until 7/1/25** **Kansas** **Montana** **Oklahoma** **Tennessee** **Texas**	

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Table 2: Summary of Process vs. Medical Requirements

Process	Medical documentation requirements				
	Unclear or discretion of judge or official	**Does not allow**	**Surgery**	**"Appropriate treatment" or similar language**	**No provider documentation**
Administrative (form, affidavit, etc)			Arizona Kentucky Nebraska	Alaska Colorado Connecticut Delaware D.C. Hawaii Maryland Minnesota North Carolina Pennsylvania Puerto Rico Virginia West Virginia	California Idaho Illinois Maine Massachusetts Michigan Nevada New Jersey New Mexico New York Oregon Rhode Island Vermont Washington
Court order	Mississippi New Hampshire Northern Mariana Islands Ohio Utah		Alabama Arkansas Georgia Guam Louisiana Missouri North Dakota Wisconsin Wyoming		
Does not allow		Florida Indiana Iowa Kansas Montana Oklahoma Tennessee Texas			
Unclear	American Samoa South Carolina South Dakota U.S. Virgin Islands				

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State-by-State Sources & More Detail

Alabama

- (-0.75) State updates birth certificates but requires both a court order and proof of surgery
- (0) State only allows residents to identify as male or female
- See Alabama Code § 22-9A-19(d) (1992), Form ADPH-HS-33, and A4TE state page

Alaska

- (0.75) State updates birth certificates using an administrative process and documentation of "appropriate treatment" (or similar language)
- (0) State only allows residents to identify as male or female
- See Department of Vital Records Gender Change Policy and A4TE state page

Arizona

- (-0.5) State updates birth certificates using an administrative process but requires proof of surgery
- (0) State only allows residents to identify as male or female
- See Ariz. Rev. Stat. § 36-337 (A)(3) (2006), Form VS-41, and A4TE state page

Arkansas

- (-0.75) State updates birth certificates but requires both a court order and proof of surgery
- (0) State only allows residents to identify as male or female
- See Ark. Code Ann. §§ 20-18-307(d) (1995) and A4TE state page

California

- (1) State updates birth certificates using an administrative process with no medical documentation requirements
- (0.5) State allows individuals to mark M, F, or X on their birth certificate
- See Hlth. and Safety Code, §§ 103425-103445 (2014), Form VS 24B (English; Spanish), and A4TE state page

Colorado

- (0.75) State updates birth certificates using an administrative process and documentation of "appropriate treatment" (or similar language)
- (0.5) State allows individuals to mark M, F, or X on their birth certificate
- See HB 19-1039 (2019), 5 CCR 1006-1, Department of Public Health's Correct or Change a Birth Certificate page and Sex Designation Form, and A4TE state page. See also HB25-1312 (2025), making process changes not reflected in this map (re: the number of times a person may change their gender marker).

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Connecticut

- (0.75) State updates birth certificates using an administrative process and documentation of "appropriate treatment" (or similar language)
- (0.5) State allows individuals to mark M, F, or X on their birth certificate
- See Conn. Gen. Stat. § 7-51, § 7-36 defining amendment to include matters pertaining to gender change, HB 7006 / Public Act 15-132 (2015), DPH website and instructions, and A4TE state page

Delaware

- (0.75) State updates birth certificates using an administrative process and documentation of "appropriate treatment" (or similar language)
- (0) State only allows individuals to identify as male or female
- See Del. Administrative Code Title 16 § 4205 (2017), DHSS List of Required Documents (including Requester's Affidavit and Physician Affidavit), and A4TE state page
- Formerly, (-0.75) state required a court order showing proof of surgical procedure.

District of Columbia

- (0.75) State updates birth certificates using an administrative process and documentation of "appropriate treatment" (or similar language)
- (0.5) State allows individuals to mark M, F, or X on their birth certificate
- See D.C. Law 20-37 (2013), Gender Designation Application (2021), and A4TE state page

Florida

- (-1) State does not allow for amending the gender marker on the birth certificate at all
  - As reported in July 2024, the state is no longer processing gender marker changes on birth certificates. While the state has not publicly provided a new policy to this effect (as of Sept 2024), such changes continue to be denied. This map and factsheet will be updated as more information becomes available.
- (0) State only allows individuals to identify as male or female
- See above, and A4TE state page
- Formerly, (0.75) state updated birth certificates using an administrative process and documentation of "appropriate treatment" (or similar language). See www.floridanamechange.org (as early as 2018).

Georgia

- (-0.75) State updates birth certificates but requires both a court order and proof of surgery
- (0) State only allows residents to identify as male or female
- See Ga. Code Ann. § 31-10-23(e) (as early as 2006) and A4TE state page

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Hawai`i

- (0.75) State updates birth certificates using an administrative process and documentation of "appropriate treatment" (or similar language)
- (0) State only allows individuals to identify as male or female
- See Haw. Rev. Stat. Ann. § 338-17.7(a)(4)(B), Act 226 (2015), State Instructions for Sex Designation Change, and A4TE state page

Idaho

- (1) State updates birth certificates using an administrative process with no medical documentation requirements
- (0) State only allows individuals to identify as male or female
- See *F.V. v. Jeppesen* (August 2020), IDHW Instructions to Change the Indicator of Sex on an Idaho Birth Certificate, and A4TE state page
- Recent history:
  - *F.V. v. Barron* (2018) required Idaho's Department of Health and Welfare to develop and implement a policy for issuing accurate birth certificates. The new policy was (1) state issued new birth certificate and did not require surgery or court order (see Idaho Gender Change Packet (2018)).
  - However, HB509 (March 2020) changed the state's policy to (-1) not allow for amending the gender marker on the birth certificate at all.
  - Then, *F.V. v. Jeppesen* (August 2020) overturned HB509, reverting to the state's earlier policy of (1) issuing new birth certificates and not requiring surgery or a court order.

Illinois

- (1) State updates birth certificates using an administrative process with no medical documentation requirements (2017)
- (0.5) State allows individuals to mark M, F, or X on birth certificate (2020)
- See Illinois Vital Records Act (2017), Illinois Department of Public Health forms, and A4TE state page

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Indiana

- (-1) State does not allow for amending the gender marker on the birth certificate at all
- (0) State only allows residents to identify as male or female
- See local reporting on agency guidance (March 2025), stemming from Executive Order 25-36 (March 2025), IN Dept of Health FAQ no longer referencing gender changes (see archived link below for contrast), and A4TE state page
- Formerly, (0) state had unclear process regarding gender marker changes.
  - In Dec 2014, an Indiana court ruled that the state's existing statute (16-37-2-10(b)) allowed for state courts to issue court orders to change the gender marker on a birth certificate. This was affirmed again by a later court ruling in 2017. However, appellate court rulings in May 2022 and Dec 2022 argued that existing statute does not apply to gender marker changes and therefore that state courts have no authority to issue court orders to change gender markers on birth certificates. In May 2023, the state Supreme Court declined to hear those cases, leaving the question unresolved. This meant that, while some judges continued to issue gender marker changes in the state (with a court order), others may have chosen not to, leading to potentially unclear or inconsistent experiences for transgender Hoosiers.
  - See Ind. Code Ann. § 16-37-2-10(b) and IN Department of Health FAQ (Dec 2024 archive showing "Gender change" listed under changes that require a court order)

Iowa

- (-1) State does not allow* for amending the gender marker on the birth certificate at all
  - Note, the new law banning these changes does not go into effect until July 1, 2025. Until that time, people *should* be able to continue using the previous process, though state officials may preemptively comply.
- (0) State only allows residents to identify as male or female
- See SF418 (2025, effective July 1, 2025), Iowa Code Ann. § 144.23(3), and A4TE state page
- Formerly, (0.75) state updated birth certificates using an administrative process and documentation of "appropriate treatment" (or similar language). See Iowa Code Ann. § 144.23(3), Iowa DHHS Vital Records, Amendment form. Changed by SF418 (2025).

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Kansas

- (-1) State does not allow for amending the gender marker on the birth certificate at all
- (0) State only allows residents to identify as male or female
- See below, and A4TE state page
- Recent history:
  - Formerly, (0.75) state updated birth certificates using an administrative process and documentation of "appropriate treatment" (or similar language), as required by a consent judgment in *Foster v. Andersen* (2019). See also Form VS624 (archive) on department website, including this FAQ (archive) on updating the gender on birth certificates.
  - In Aug 2023, a federal court vacated parts of the consent judgment, after the state enacted a new law defining sex throughout state law based on sex assigned at birth. That court decision left the legal availability of gender marker changes uncertain.
  - On Sept 15, 2023, the state Department of Health announced it would no longer issue any gender marker changes to birth certificates, due to the new state law.

Kentucky

- (-0.5) State updates birth certificates using an administrative process but requires proof of surgery
- (0) State only allows residents to identify as male or female
- See Ky. Rev. Stat. Ann. § 213.121(5) (as early as 1990), VS-15GR (dated 2015), and A4TE state page

Louisiana

- (-0.75) State updates birth certificates but requires both a court order and proof of surgery
- (0) State only allows residents to identify as male or female
- See La. Rev. Stat. Ann. § 40:62, LA Dept of Health and Application to Amend, LA Trans Advocates page, and A4TE state page

Maine

- (1) State updates birth certificates using an administrative process with no medical documentation requirements
- (0.5) State allows individuals to mark M, F, or X on birth certificate
- See Maine Department of Health and Human Services 10-146 CMR ch. 16 (2020), Maine DHHS Gender Marker Change on Birth Certificates FAQ, Maine DHHS Application, and A4TE state page. See also LD 2235 (2024), putting "X" options into statutory law.

Maryland

- (0.75) State updates birth certificates using an administrative process and documentation of "appropriate treatment" (or similar language)
- (0) State only allows residents to identify as male or female
- See Md. Code Ann, [Health - Gen.] § 4-214, Maryland DOH Change Sex Designation page and Application for Change in Sex Designation, and A4TE state page

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Massachusetts

- (1) State updates birth certificates using an administrative process with no medical documentation requirements
- (0.5) State allows individuals to mark M, F, or X on birth certificate (2024)
- See Mass Gen. Laws Ann. ch. 46, § 13(e), amended by H4800/Act 140, §§ 77-79 (2024; effective July 1, 2024), Mass. Vital Records Amend a Birth Certificate for Sex page, Fact Sheet, and Application/Affidavit, and A4TE state page

Michigan

- (1) State updates birth certificates using an administrative process with no medical documentation requirements
- (0.5) State allows individuals to mark M, F, or X on birth certificate
- See below, HB5303 (2025), Sex Designation Form, and A4TE state page
- State formerly required proof of sex reassignment surgery in order to change gender marker (see Mich. Comp. Laws Ann. § 333.2831(c) (2006)). In February 2021, the Michigan Department of Health and Human Services (MDHHS) formally requested guidance from the state's Attorney General regarding the constitutionality of that requirement. In June 2021, the Attorney General issued *Opinion 7313*, finding that the requirement was unconstitutional. In July 2021, the state published a new process allowing for self-attestation with no requirement of medical documentation or a court order. See also Sex Designation Form, including "X" options. In January 2025, the state also enacted HB5303, codifying these policies into law.

Minnesota

- (0.75) State updates birth certificates using an administrative process and documentation of "appropriate treatment" (or similar language)
- (0) State only allows residents to identify as male or female
- See Minn. Stat. Ann. § 144.218, Minn. Rules 4601.1100, Minn. DOH Change a Birth Record page ("Changing sex/gender indicators"), Supporting Documents for Amendments page ("For changing gender," either a physician's letter or a court order), and A4TE state page

Mississippi

- (0) State has unclear process regarding gender marker changes and/or unclear medical requirements that may be left to the discretion of individual judges
- (0) State only allows residents to identify as male or female
- See Miss. Admin. Code 15-5-85:3.21.2, and A4TE state page
- Note that the amended birth certificate will show the updated sex as a "marginal notation," meaning the birth certificate will show both gender markers.

Missouri

- (-0.75) State updates birth certificates but requires both a court order and proof of surgery
- (0) State only allows residents to identify as male or female
- See Mo. Ann. Stat. § 193.215(9) (2006), and A4TE state page

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Montana

- (-1) State does not allow for amending the gender marker on the birth certificate at all
- (0) State only allows residents to identify as male or female
- See Rule 37.8.311 (Initially implemented May 2022; formally adopted September 2022; blocked June 2023; reinstituted February 2024), prohibiting any changes to the gender marker. See also A4TE state page.
- Recent history:
  - Formerly, state issued new birth certificate and did not require surgery or court order (see Rule 37.8.311 (2017 version) and archived Gender Designation Form).
  - In 2021, the state enacted SB280, adding requirements for proof of surgery and a court order before updating the birth certificate.
  - In July 2021, a lawsuit was filed against this discriminatory law.
  - In April 2022, a district court issued a preliminary injunction temporarily blocking enforcement of the law and ordering the state to its previous 2017 process while the court case continued.
  - In May 2022, despite the court order, the state health department issued an "emergency order" that prohibits any update to the gender marker on the birth certificate under any circumstance, even with proof of surgery and a court order.
  - On Sept 9, 2022, this emergency order was formally adopted as an administrative rule (Rule 37.8.311).
  - On Sept 15, 2022, the court again ordered the state to revert to its 2017 process and to stop violating the court's instructions. Hours later, the state responded by saying it would continue to enforce its new rule, but the following week the state said it would comply with the court order and accept applications for birth certificate updates. A Gender Designation Form is now available on the state website, but given the hostility of the state, it is unknown whether such applications will actually be processed or approved.
  - On Sept 26, 2022, the Montana health department asked the Montana Supreme Court to suspend the district court's order so the health department can resume its rule prohibiting any gender marker changes.
  - In January 2023, the Montana Supreme Court ruled the state health department should have been issuing updates according to the 2017 procedures during the injunction period. However, the ruling also stated that the new 2022 administrative rules (banning updates under any circumstance) would need to be addressed separately. LGBTQ advocates filed a motion to address that 2022 rule separately.
  - In June 2023, the district court order ruled SB280 unconstitutional, permanently blocked both SB280 and the 2022 administrative rule, and further found the state in contempt for disregarding the court's repeated orders to follow the 2017 process. This meant that gender marker changes were available under the 2017 rule process.
  - In February 2024, the state reinstituted the 2022 administrative rule—banning gender marker changes under any circumstances—citing a new state law passed in 2023 defining "sex" to enable discrimination against transgender people.

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Nebraska

- (-0.5) State updates birth certificates using an administrative process but requires proof of surgery
- (0) State only allows residents to identify as male or female
- See Neb. Rev. Stat. § 71-604.01 (1994) and A4TE state page

Nevada

- (1) State updates birth certificates using an administrative process with no medical documentation requirements
- (0.5) State allows individuals to mark M, F, or X on birth certificate
- See Nev. Admin. Code. Ch. 440, § 030, Application for Correction of a Record packet, Changing Your Gender in Nevada guide, and A4TE state page

New Hampshire

- (0) State has unclear process regarding gender marker changes and/or unclear medical requirements that may be left to the discretion of individual judges
- (0) State only allows residents to identify as male or female
- See NH RSA 5-C:87 and A4TE state page

New Jersey

- (1) State updates birth certificates using an administrative process with no medical documentation requirements
- (0.5) State allows individuals to mark M, F, or X on birth certificate
- See N.J. Stat. Ann. § 26:8-40.12 (2018), S 478 (2018), and A4TE state page
- Formerly, (-0.75) state required both a court order and proof of surgery from a licensed physician. See earlier version of N.J. Stat. Ann. § 26:8-40.12 (1984-2018).

New Mexico

- (1) State updates birth certificates using an administrative process with no medical documentation requirements
- (0.5) State allows individuals to mark M, F, or X on birth certificate
- See SB 20 (2019), NM Health's Gender Designation Change on a Birth Certificate page, Change Gender Designation on a Birth Certificate form, and A4TE state page
- Formerly required proof of "sex reassignment surgery."

New York

- (1) State updates birth certificates using an administrative process with no medical documentation requirements
- (0.5) State allows individuals to mark M, F, or X on birth certificate (2020)
- See NYCCRR Title 10 Section 35.2 (2014), DOH's Gender Designation Corrections information "including requests for non-binary gender designations," Form DOH-5305 (January 2023), and A4TE state page.

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North Carolina

- (0.75) State updates birth certificates using an administrative process and documentation of "appropriate treatment" (or similar language)
- (0) State only allows residents to identify as male or female
- See Birth Certificate Modification Application (p6) with multiple routes to access updated birth certificate. See also A4TE state page.
- Formerly, N.C. Gen. Stat. §§ 130A-118(b)(4) (since at least 2005) required proof of "sex reassignment surgery." However, a 2022 case brought by Lambda Legal resulted in a consent judgement that the state must provide accurate birth certificates without requiring surgery.

North Dakota

- (-0.75) State updates birth certificates but requires both a court order and proof of surgery*
  - *Note: this law explicitly requires genital surgery: "The sex of the individual was changed with anatomically correct genitalia for the identified sex as certified by a medical provider." See 23-02.1-25.1(2)(c) (2023).
- (0) State only allows residents to identify as male or female
- See HB1297 (2023) banning any sex/gender marker changes to birth certificates, and HB1139 (2023) requiring birth certificates to include a sex marker and banning the use of any marker other than male or female. See also A4TE state page.
- Previously, state allowed changes, but required proof of "sex reassignment surgery" (undefined) to change gender marker. See ND Cent. Code §23-02.1-25 (2005), ND Admin. Code §33-04-12-02(2006),

Ohio

- (0) State has unclear process regarding gender marker changes and/or unclear medical requirements that may be left to the discretion of individual judges
- (0) State only allows residents to identify as male or female
- See Ohio Department of Health's website (2021, ACLU of Ohio's FAQ, Form 30.0 "Application for Correction of Birth Record" (Aug 2021) to initiate court order, and A4TE state page.
- Prior to 2016, state (0.5) updated gender markers with a court order, consistent with state's statutory process for other birth certificate changes. Beginning in 2016, state (-1) refused to change gender markers even under court order. This policy was ruled unconstitutional in *Ray v. McCloud* (Dec 2020), and the state announced in April 2021 that it would not challenge the ruling. The current policy (0.5) was announced in May 2021.

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Oklahoma

- (-1) State does not allow for amending the gender marker on the birth certificate at all
- (0) State only allows residents to identify as male or female
- See Executive Order 2021-24 (Nov 2021), SB1100 (2022), and A4TE state page
- Previously, Oklahoma had unclear, unknown, or unwritten policy regarding gender marker changes on birth certificates (0). In Oct 2021, the state's Department of Health formalized a process for these changes (requiring a court order (0.5)) including the option of a nonbinary gender marker, all as part of a settlement in a federal lawsuit. The state issued its first nonbinary marker in Oct 2021, but in Nov 2021, the state's Governor issued Executive Order 2021-24, not only preventing nonbinary options but also *any* changes of sex/gender markers on birth certificates (-1). SB1100 (2022) codified the EO's ban on nonbinary options into law.
- A lawsuit has been filed against this policy. See *Fowler v. Stitt* (filed March 2022). While a court initially dismissed the lawsuit (June 2023), Lambda Legal appealed the ruling to the Tenth Circuit, and this dismissal was reversed (June 2024). The case now awaits trial.

Oregon

- (1) State updates birth certificates using an administrative process with no medical documentation requirements
- (0.5) State allows individuals to mark M, F, or X on birth certificate
- See HB 2673 (2017), OAR 333-011-0265 (eff. Jan 1, 2018), OHA 2673 Application (must be notarized), and A4TE state page

Pennsylvania

- (0.75) State updates birth certificates using an administrative process and documentation of "appropriate treatment" (or similar language)
- (0) State only allows residents to identify as male or female
- See Pennsylvania Department of Health policy (2016), Birth Certificate Correction Forms (must be notarized), and A4TE state page (including a sample physician statement)

Rhode Island

- (1) State updates birth certificates using an administrative process with no medical documentation requirements
- (0.5) State allows individuals to mark M, F, or X on birth certificate (2019)
- See R.I. Gen. Laws § 23-3-21, DOH Changes to the Sex Field on a Rhode Island Birth Certificate page, R.I. Code R. 14 170 001 §§ 35-37 (2004), and A4TE state page

South Carolina

- (0) State has unclear process regarding gender marker changes and/or unclear medical requirements that may be left to the discretion of individual judges
- (0) State only allows residents to identify as male or female
- See A4TE state page for more information

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South Dakota

- (0) State has unclear process regarding gender marker changes and/or unclear medical requirements that may be left to the discretion of individual judges
- (0) State only allows residents to identify as male or female
- See S.D. Admin. R. 44:09:05:02, or A4TE state page for more information

Tennessee

- (-1) State does not allow for amending the gender marker on the birth certificate at all
- (0) State only allows residents to identify as male or female
- See Tenn. Code Ann. § 68-3-203(d) (since at least 2010) and A4TE state page

Texas

- (-1) State does not allow for amending the gender marker on the birth certificate at all
- (0) State only allows residents to identify as male or female
- See reporting, confirmed by TX Health and Human Services, that as of Aug 2024, the state would no longer allow changes to the gender marker on birth certificates. See also A4TE state page.
- Formerly state required a court order. See archived captures of TX Health and Human Services website, Form VS-170, TX Health & Safety Code § 192.011, and NCTE for more information.

Utah

- (0) State has unclear process regarding gender marker changes and/or unclear medical requirements that may be left to the discretion of individual judges
- (0.5) State allows individuals to mark M, F, or X on birth certificate
- See SB93 (2023), requiring a court order, which can only be granted "if the court determines by clear and convincing evidence that" the individual has met a long list of criteria including that they have transitioned, and further mentions that the court "shall consider...evidence of medical history, care, or treatment related to sex transitioning." See also A4TE state page with additional guidance including sample forms.
- Formerly, state required a court order to change the birth certificate, but did not specify any medical or other requirements to do so. See Utah Code Ann. § 26-2-11 (2004). This was changed by SB93 (2023).

Vermont

- (1) State updates birth certificates using an administrative process with no medical documentation requirements
- (0.5) State allows individuals to mark M, F, or X on birth certificate
- See H 111/Act 46 (2017, effective July 1, 2019), H 628/Act 88 (2022, effective July 1, 2022), 18 V.S.A. § 5112, DOH Application to Correct or Amend a Vermont Birth Certificate, and A4TE state page
- Formerly, state required a court order. See 18 Vt. Stat. § 5112 (2011-2019).

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Virginia

- (0.75) State updates birth certificates using an administrative process and documentation of "appropriate treatment" (or similar language)
- (0) State only allows residents to identify as male or female
- See SB 657 (2020), Form VS-42 (2020), and A4TE state page

Washington

- (1) State updates birth certificates using an administrative process with no medical documentation requirements
- (0.5) State allows individuals to mark M, F, or X on birth certificate
- See the Washington Department of Health's policy, DOH Form 422-143: Change of Gender Designation Request (must be notarized), and A4TE state page

West Virginia

- (0.75) State updates birth certificates using an administrative process and documentation of "appropriate treatment" (or similar language)
- (0) State only allows residents to identify as male or female
  - Note: the state explicitly bans the use of gender-neutral or nonbinary markers on birth certificates. See HB4233 (2024).
- See Sex Designation Form (May 2022), West Virginia Department of Health & Human Resources Correct or Amend a Certificate page, HB4233 (2024), and A4TE state page
- Recent history: State clearly allowed for gender updates with a court order (see W. Va. Code § 16-5-25, § 64-32-12) (MAP score of 0.5), but in June 2020 the State Supreme Court of Appeals ruled in *In re: G.M.* that courts do not have the authority to order state's Department of Health & Human Resources to change the gender marker on a birth certificate, in effect disallowing gender marker changes entirely (MAP score of -1). In August 2021, this ruling was appealed by the ACLU in *Hersom v. Crouch*; see also this coverage. In May 2022, the state Department of Health & Human Resources issued a new form allowing individuals to update their birth certificates (see above), and the court case is now on temporary pause ("in abeyance") while the parties discuss potential settlement.

Wisconsin

- (-0.75) State updates birth certificates but requires both a court order and proof of surgery
- (0) State only allows residents to identify as male or female
- See Wis. Stat. Ann. § 69.15(4) (since at least) and A4TE state page

Wyoming

- (-0.75) State updates birth certificates but requires both a court order and proof of surgery
- (0) State only allows residents to identify as male or female
- See WY Rules and Regulations HLTH VR Ch. 10 s 4(e)(iii) (2004) or A4TE's state page

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U.S. Territories

American Samoa

- (0) Territory has unclear process regarding gender marker changes and/or unclear medical requirements that may be left to the discretion of individual judges
- (0) Territory only allows residents to identify as male or female
- "The High Court of American Samoa has held that the alteration of a birth certificate is granted only to correct information that was erroneous at the time of recordation, or to reflect a name change due to adoption." NCTE reports anecdotal cases of successfully updating gender markers on birth certificates, but there is no clear policy for doing so.

Guam

- (-0.75) Territory updates birth certificates but requires both a court order and proof of surgery
- (0) Territory only allows residents to identify as male or female
- "In order to update the gender marker on a birth certificate, the requestor must provide a sworn statement from the physician having performed the surgery, thus certifying the sex of the requestor has been changed by surgical procedure."

Northern Mariana Islands

- (0) Territory has unclear process regarding gender marker changes and/or unclear medical requirements that may be left to the discretion of individual judges
- (0) Territory only allows residents to identify as male or female
- "In order to change a legal name on a birth certificate, the applicant must provide a court order for legal name and gender marker change to the Vital Statistics Office Division of Public Health."

Puerto Rico

- (0.75) Territory updates birth certificates using an administrative process and documentation of "appropriate treatment" (or similar language)
- (0.5) State allows individuals to mark M, F, or X on birth certificate
  - Note the X option may not be immediately available, as the state's birth certificate registry system will need to update following the 2025 court ruling
- See *Arroyo v. Rosselló* (2018), Department of Health Circular Letter 3-18, news coverage of the 2025 ruling permitting X options (2025), or A4TE territory page for more information.

U.S. Virgin Islands

- (0) Territory has unclear process regarding gender marker changes and/or unclear medical requirements that may be left to the discretion of individual judges
- (0) Territory only allows residents to identify as male or female
- See A4TE territory page for more information