PES
PRESIDENTIAL LECTURE
9-15-17

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THEME:

• D.

• A.

• R.
• Diversity
• Advocacy
• Research
CAH
46XX
Female
Biodiversity
COLEOPTERA
COLEOPTERA

• >350,000 different known beetle species worldwide
• 8 x as many beetles species as all fish, amphibian, reptile, bird, & mammal species combined
• 1/4 of all known species of animals are beetles!
CLOWNFISH

• Live within sea anemones
  — 2 large fish (M, F breeding pair)
  — Many small fish, all male, sexually immature

• If female removed
  — Male mate changes sex to female
    (Not sure which bathroom they use)
  — Next largest fish takes over role as the sexually mature male
**SEAHORSES**

- Female deposits eggs in Male ventral pouch
- Male releases sperm into pouch
- Males give birth approx. 24 days later
HUMAN DIVERSITY

• In virtually every trait
## Percent of Individuals Who Identify as Transgender by Age in U.S.

<table>
<thead>
<tr>
<th>Age Group (yr)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>13-17</td>
<td>0.7*</td>
</tr>
<tr>
<td>18-24</td>
<td>0.7**</td>
</tr>
<tr>
<td>25-64</td>
<td>0.6**</td>
</tr>
<tr>
<td>≥ 65</td>
<td>0.5**</td>
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</tbody>
</table>

* 150,000 youth (13-17 yr)
** 1.4 million adults (≥ 18 yr)

State-level, population based surveys/ CDC surveys, The Williams Institute, UCLA School of Law, 2017
GENDER IDENTITY

• Complex interplay

• Biologic

• Environmental

• Cultural factors
EVIDENCE FOR BIOLOGIC UNDERPINNINGS OF GENDER IDENTITY

• Insights from:
  • Genetics
  • Hormones
  • Brain

• Not a “litmus test” of Transgender
  — Not to pathologize!
  — Goal: \( \uparrow \) Understanding \( \rightarrow \) \( \uparrow \) Acceptance, QOL
**TRANSGENDER: ROLE OF GENETICS?**

  
  • **Concordance for Gender Dysphoria**
  
  • Comprehensive literature review
  
  • N = 23 monozygotic (8 F, 15 M) twin pairs
  
  • N = 21 same-sex dizygotic (5 F, 16 M) twin pairs
  
  • N = 7 opposite sex twin pairs
  
  • **Results:** Concordance for Gender Dysphoria
    
    • Monozygotic Twin pairs: 39.1%
    
    • Same-sex dizygotic twin pairs: 0%  
      
      \(p = 0.005\) vs. MZ twins
    
    • Opposite sex twin pairs: 0%

• **Studies of individual candidate genes:** inconsistent
Most transgender individuals do not have a “Disorder (Difference) of Sex Development” (DSD) or any obvious abnormality in sex steroids.

Studies in patients with DSD:
- Informed our understanding of gender identity development
- Role of prenatal/ (postnatal) androgens
Congenital Adrenal Hyperplasia (CAH)  
(CYP21A2 Deficiency)

- 46 XX raised Female (F)
  - N = 250
    - 94.8%: F gender identity
    - 5.2%: M gender or gender dysphoria
      - 10-20 x ↑ risk vs. control
      - No correlation with degree of genital virilization

- Supports “some” role of prenatal androgens in gender identity development

Dessens AB et al. Arch Sex Behav 2005
Congenital Adrenal Hyperplasia (CAH) (CYP21A2 Deficiency)

• Youth with CAH from U.K. (4 – 11 yr)
  — N = 43 Girls (37 SW, 6 SV); 38 Boys (35 SW, 3 SV)
  — N = Controls: Age-matched relatives: 41 F, 31 M

• Measures: Gender Identity
  — 2 parent reports (GIQC, CIC)
  — 1 Child self-report (GIIC)

• Results
  — 12.8% girls with CAH (vs. 0% in CAH boys, controls)
    ▶ Cross-gender identification
    ▶ Independent of gender role behavior (“factor analysis”)

• Supports “some” role of prenatal androgens in gender identity development

• Potential limitations: Selection bias; cohort effects

Pasterski V et al. Arch Sex Behav, 2015
Neurobiologic Basis for Transgender? Adolescents with Gender Dysphoria

• N = 38 adolescents with GD (21 FTM, 17 MTF)
  — Blockers only (GnRH agonist)
• N = 41 adolescent controls (21 F, 20 M)
• f MRI
  • Hypothalamic activation in response to odorous steroid:
    — Androstadienone
      » Present in sweat, semen
    — Changes in activation over time
      » 6 on/off cycles over 3.6 min

Burke SM. et al. Frontiers in Endocrinology, 2014
Neurobiologic Basis for Transgender? Adolescents with Gender Dysphoria

Burke SM. et al. Frontiers in Endocrinology, 2014
Neurobiologic Basis for Transgender Adolescents with Gender Dysphoria

Burke SM. et al. Frontiers in Endocrinology, 2014
Sex beyond the genitalia: The human brain mosaic

• MRI
• Multiple data sets (4): 1400 human brains
• Assess degree of internal consistency
  • Voxel-based morphometry (VBM)
  • Focused on areas which show largest sex differences (least overlap between M, F)

• Principal finding:
  • Variability more prevalent than internal consistency

Joel D et al. PNAS, November 30, 2015
ADVOCACY
PES Strategic Direction 2017-2022

**Mission**

To advance and promote the endocrine health and well-being of children and adolescents.

**Vision**

To be the professional home and voice of pediatric endocrinology in North America.

**Goals**

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Collaboration and Leadership</th>
<th>Member Value</th>
<th>Advocacy</th>
<th>Society Strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improving care through teaching, discovery and dissemination of knowledge.</td>
<td>Expanding impact and value of the Society through strategic partnerships.</td>
<td>Providing opportunities for professional growth and practice development.</td>
<td>Advocating for the needs of Society members, patients and families.</td>
<td>Optimizing Society strength through membership and leadership.</td>
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</tbody>
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PES ADVOCACY EFFORTS

- Diabetes Advocacy Alliance
  - Public Policy Committee

- PSLRP
  - “Enhancing Children’s Access to Specialty Care Act”

- Transgender
  - Transgender Health SIG
Words of politicians…

• Often not informed by current research
• Without an appreciation for human diversity
• Often without direct knowledge or experience with transgender people
Human diversity makes tolerance more than a virtue; it makes it a requirement for survival.

— Rene Dubos —
“Dutch protocol”: 6 yr Follow-Up

- N= 55 (22 MTF, 33 FTM)
- Protocol
  - Puberty blockers (Avg. 14.8 yr at start of Rx)
  - Cross Sex Hormones (CSH) (Avg. 16.7 yr at start of Rx)
  - “Gender Reassignment Surgery” (Avg. age 20.7 yr)
- Mental Health Outcomes
  - 1 yr pre-blockers, T 0 for CSH, 1 yr post-surgery
- Results
  - Gender Dysphoria: Resolved
  - Psychological functioning: Generally improved
  - “Well being” > vs. same age young adults from general population
  - No patients reported regret at any phase of protocol

De Vries ALC et al. Pediatrics, 2014
The Impact of Early Medical Treatment of Transgender Youth

Multi-Center Network

- Benioff Children’s Hospital/ UCSF
- Boston Children’s Hospital/ Harvard
- Children’s Hospital LA/ USC
- Lurie Children’s Hospital Chicago/ Northwestern
MY MENTORS

Mel Grumbach, MD

Selna Kaplan, MD, PhD

Felix Conte, MD

Walt Miller, MD
MY MENTORS

Norm Spack, MD

Diane Ehrensaft, PhD
PES Board of Directors 2016-17 / 2017-18
with Executive Team: Thank You!
PARTING THOUGHTS

• Celebrate diversity!

• Take an active part in PES!

• Be aware of privilege that not all of us have

• Follow your passions & find balance in life!
Thank You!