

**Justice Denied:  
Mr. Hopkins Invisible Semen**

**American Investigative Society of Cold Cases**  
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**DNA evidence in context**

**Probative**

- Suspect not at scene
- Can't explain the DNA
- Presence suggests guilt

**Non-probative**

- Suspect was there before
- Easily explains the DNA
- Doesn't indicate guilt

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**1979 murder of Janet Walsh**



Janet Walsh

- 23 year old woman
- Monaca, Pennsylvania
- strangled with bandana
- face down in her bed
- nightshirt top only
- bathrobe tie on hands
- divorcing husband
- multiple partners

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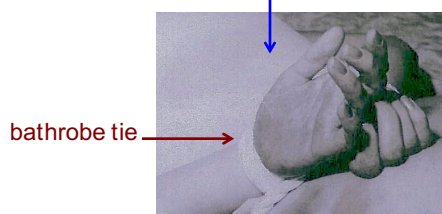
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## The crime scene

blue nightshirt



Viewed as homicide, not sex crime

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## Police suspects

- estranged husband
- boss (sleeping with him)
- co-worker "prime suspect"
- friend (night murdered)

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## 2010 DNA analysis

- cold case funding
- serologist found 100 DNA spots
- thought death was a sex crime
- semen is easy to find, so ...
- sperm hunt found 15 regions
- DNA evidence of previous lovers

- DNA found on:
- blue nightshirt
  - bathrobe tie

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## Prosecutor theory



Frank Martocci

- sexual misadventure
- man straddling woman
- bandana asphyxiation
- ejaculates, and hits nightshirt & robe tie
- explains coincidental location on two items

How and when the DNA got there  
(unusual expert testimony)

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## Pennsylvania v Hopkins



Gregory Scott Hopkins

- local councilman
- former lover of Walsh
- successful businessman
- known philanderer
- no motive, solid alibi
- four other suspects
- cast-off sample obtained
- his DNA matches the nightshirt & robe tie (flat sheet, 2 spots)

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## DNA evidence

sexual act

Description	Items	Victim K2	Husband K4	Defendant K7	Other
Oral, vaginal	Q4, Q5	match			
Pillow case	K1	match			

death

Description	Items	Victim K2	Husband K4	Defendant K7	Other
Handkerchief	Q1, Q2, Q7				
Fingernails	Q12, Q13				

clothing

Description	Items	Victim K2	Husband K4	Defendant K7	Other
Nightgown top	Q3				match
Bathrobe cord	Q6				match
Blue bathrobe	Q14, Q15, Q16, Q17, Q18	match			match

sheets

Description	Items	Victim K2	Husband K4	Defendant K7	Other
Fitted sheet	Q8, Q9	match			
Flat sheet	Q10, Q11		match	match	

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## Defense theory



Hon. James Ross

- Hopkins wasn't there when Walsh died
- old DNA from before
- no coincidences
- DNA is expected
- no semen on hands
- with prior sexual relations, DNA is not probative

DNA doesn't say how or when it was left  
(typical expert testimony)

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## Two competing hypotheses

### Prosecution:

Mr. Hopkins committed the crime  
Semen deposited at the time of death

### Defense:

Mr. Hopkins did not commit the crime  
Semen left before the time of death

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## Fact 1: Proximity of semen stains



### Hopkins DNA on:

- bathrobe tie
- blue nightshirt
- flat sheet (2 spots)

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## Note on the flat sheets

- direct cloth contact, either way
- transfer DNA from other items
- adds no new information
- consistent with explanations of both prosecution and defense
- not probative or helpful here

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## Prosecution explains proximity

### Prosecution hypothesis:

Mr. Hopkins committed the crime  
Semen deposited at the time of death

Explains the proximity of semen stains  
by direct ejaculation during strangling

Says there is no other possibility

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## DNA transfer



Secondary DNA transfer of biological substances under varying test conditions  
Maryjo Gray<sup>1,2\*</sup>, Ian Barker<sup>1</sup>, Robert E. Mitchell<sup>1</sup>, Richard A. J. van Oosterhout<sup>1</sup>

**ARTICLE INFO**  
Received 11 January 2016  
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**ABSTRACT**  
The research investigates factors that may influence the secondary transfer of DNA. Tests include the size of biological substance deposited, the nature of the substrate, the moisture content, the texture of the surface and type of contact between the surface. The authors also investigate the effect of the size of the biological substance, the nature of the substrate, the moisture content, the texture of the surface and type of contact between the surface. The authors also investigate the effect of the size of the biological substance, the nature of the substrate, the moisture content, the texture of the surface and type of contact between the surface. The authors also investigate the effect of the size of the biological substance, the nature of the substrate, the moisture content, the texture of the surface and type of contact between the surface.

- Increases with:
- moisture
  - pressure
  - friction
  - absorbent cotton material

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## From nightshirt to robe tie



- Walsh struggled, perspired
- back moist, shirt wet
- old semen stain on shirt
- wet shirt moistens robe tie
- pressure and friction from tied hands behind back
- sperm moves from shirt to bathrobe tie
- DNA detected years later

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## Defense explains proximity

### Defense hypothesis:

Mr. Hopkins did not commit the crime  
Semen left before the time of death

Explain the proximity of semen stains  
by DNA transfer during strangling,  
due to moisture, pressure & material

Sexual relationship, other possibilities

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## Fact 1: Proximity of semen stains



Both hypotheses explain the data  
Explanations cancel each other out  
DNA proximity is not probative

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## Fact 2: Invisible semen stains



Not seen (1979) on:

- bathrobe tie
- blue nightshirt
- flat sheet (2 spots)

Checked (1979) by:

- police investigator (hours)
- pathologist (days)
- coroner (days)
- criminalist at lab (weeks)

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## Prosecution explains invisibility

### Prosecution hypothesis:

Mr. Hopkins committed the crime  
Semen deposited at the time of death

All four semen stains were **invisible**,  
so the four examiners didn't see them;  
or, Mr. Hopkins shoots invisible semen

low chance for blue nightshirt X invisible stain	low chance for bathrobe tie X invisible stain	low chance for top sheet #1 X invisible stain	low chance for top sheet #2 invisible stain
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## Fresh semen



- dries in 2-6 hours
- crusted stain
- noticeable border
- visible in ordinary light
- stiff, starchy consistency
- forensic test in 1979  
visual and tactile exam

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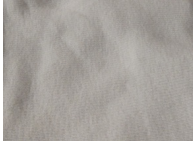
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## Faded semen



- 2 weeks to 2 months
- creasing and rubbing
- crust flakes off
- wetting disperses
- washing cleanses
- rugged sperm cells stay often invisible to eye

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## Defense explains invisibility

### Defense hypothesis:

Mr. Hopkins did not commit the crime  
Semen left before the time of death

Not fresh semen, so no fresh stains  
Faded over weeks or months  
by rubbing, wetting or washing

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## Fact 2: Invisible semen stains



Defense hypothesis better explains the  
evidence than prosecution hypothesis.  
DNA invisibility supports exculpatory.

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## Hopkins convicted by DNA

November 22, 2013



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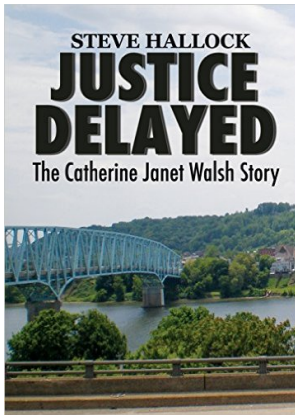
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## Janet's Secret



**MAY 16, 2015, 10:00 PM** | She was murdered at 23. Five suspects and cops couldn't arrest anyone. It was the perfect crime for 34 years - until now. Correspondent Peter Van Sant investigates. | **Read story**



**Never A Cold Case**  
BEAVER COUNTY'S 32 YEAR LONG HOMICIDE INVESTIGATION

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## Jurors swayed by DNA



48 HOURS SEGMENT EXTRAS

Jurors: DNA evidence was influential in decision to convict

Even though:

- Experts can't say how or when DNA was left
- Yet that was the crux of prosecution's case
- No DNA expert for prosecution on "coincidence"
- Mr. Hopkins' invisible semen was exculpatory
- Sentenced to 8 years in prison on bogus DNA

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## Sources of human bias

- Serologist: [ascertainment bias](#)
- Investigator: [confirmation bias](#)
- Prosecutor: [competition bias](#)
- Jurors: [social disapproval bias](#)

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## Forensic policy questions

- R. 702
- Should non-experts be allowed to testify on DNA?
  - Can they opine on how and when DNA was left?
  - Trial judge said "no", but overturned on appeal.
- R. 403
- Is DNA too prejudicial when results non-probative?
  - Can jurors understand when DNA isn't relevant?
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- Mr. Hopkins' invisible semen was exculpatory.
  - How can defendants be convicted on bogus DNA?

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## TrueAllele® interpretation

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TrueAllele YouTube channel



Cybergenetics



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