

Adapting the law to the technology? Germany's current debate on DNA Phenotyping

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Germany's current debate on DNA Phenotyping

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Freiburg, the Green city



From a murder case to a law within 6 months?

- 16.10.2016: A student found raped and murdered in Freiburg
- November 2016: First calls for including FDP into German law
- 3.12.2016: A suspect arrested: Young Afghan refugee
- 3.12.2016: Minister of Law, Federal State of Baden Württemberg (BaWü), announces his Law initiative for FDP
- 27.12.2016: Minister's proposal presented in public
- 01.02. 2017: The government of BaWü approves, but only for EVC, not for biogeographical ancestry
- 09.02.2017: The Bundesrat discusses the law proposal
- 21.03.2017: Expert hearing at the State Department for Justice

The structural context

- In Germany, „regulation“ often means „the law allows it“, with very few specifications
- No ethics committee
- No biometrics commissioner
- Data protecting officers do not feel responsible for DNA
- No institution that would implement checks and balances
- Experts from technology and science are currently the only acknowledged experts in technology policy advising

Media campaign I

- Media coverage since Nov. 2016: overtly positive, particularly in Freiburg
- First calls in a flyer campaign by right-winged groups
- Calls in the local daily newspaper, featuring experts from police, forensics and technology development
- Taken up by police representatives and politicians in November
- Taken up by regional and national media in December
- Arguments in favour of the technology:
 - The law is outdated, it needs to be adapted to technological progress
 - The success rates of these technologies are very high
 - No data protection issues – only visible traits („pass port“)
 - No racial profiling
 - Murder of Maria L. could have been arrested earlier

Very different from the debate in 2007-2009! „Heilbronn

Bl...“

High success rates, cited in the law proposal and in the media by politicians

- Augenfarbe blau oder braun: 90-95%
- Haarfarben rot, blond, braun, schwarz: 75-90%
- Hautfarbe: helle und dunkle Hauttypen: 98%
- Biogeographische Herkunft: Kontinentale Zuordnung mit 99,9%

Further requests of the proponents

- Allow for ‚quick fix‘ – speeding up investigations
- Permit all FDP technological developments that are yet to come
- Permit permanent storing of DNA data by the police

Proponents

Federal Office of Criminal Investigation (BKA); State Office of Criminal Investigation BaWü (LKA Stuttgart); police representatives; forensic scientists; politicians (CDU, SPD, Green, AfD)

Media campaign II: Open letter

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<https://stsfreiburg.wordpress.com/>

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Our observations and arguments

- The political context in which the law is being pushed
- The strategy and speed of the law initiative and its public presentation (bypassing many journalists, politicians, actors)
- The overtly positive presentation of the technologies and concepts by scientists in the public sphere
- The murder case of Freiburg – irresolvable with FDP
- Careful dynamic regulation instead of a *carte blanche*
- Only as *last resort*
- Broad societal debate necessary for democratic legitimacy
- Minorities in the focus, warrants anti-discriminatory efforts
- Scientific weaknesses: Statistics; and biogeographical ancestry

Statistical concerns

Likelihoods vs. posteriori probabilities

Prevalence adjustment

Prosecutor's fallacy

An interdisciplinary team helped to make this point:

- Prof. Dr. Peter Pfaffelhuber, Statistics
- Dr. Fabian Staubach, Population Genetics
- Prof. Dr. Anna Köttgen, Genetic Epidemiology

Inappropriate prioritisation of minorities

- Wrong conclusions from probabilities
- FDP-lead DNA-dragnets in police investigations are only practicable in regard to minorities
- Minorities will become over represented in forensic databases
- Minorities become stigmatized and pressured when focused by the police
- Media, investigators and scientists interpret laboratory data against the backdrop of socio-cultural assumptions;
- See „Heilbronner Phantom“ (Prof. Anna Lipphardt,

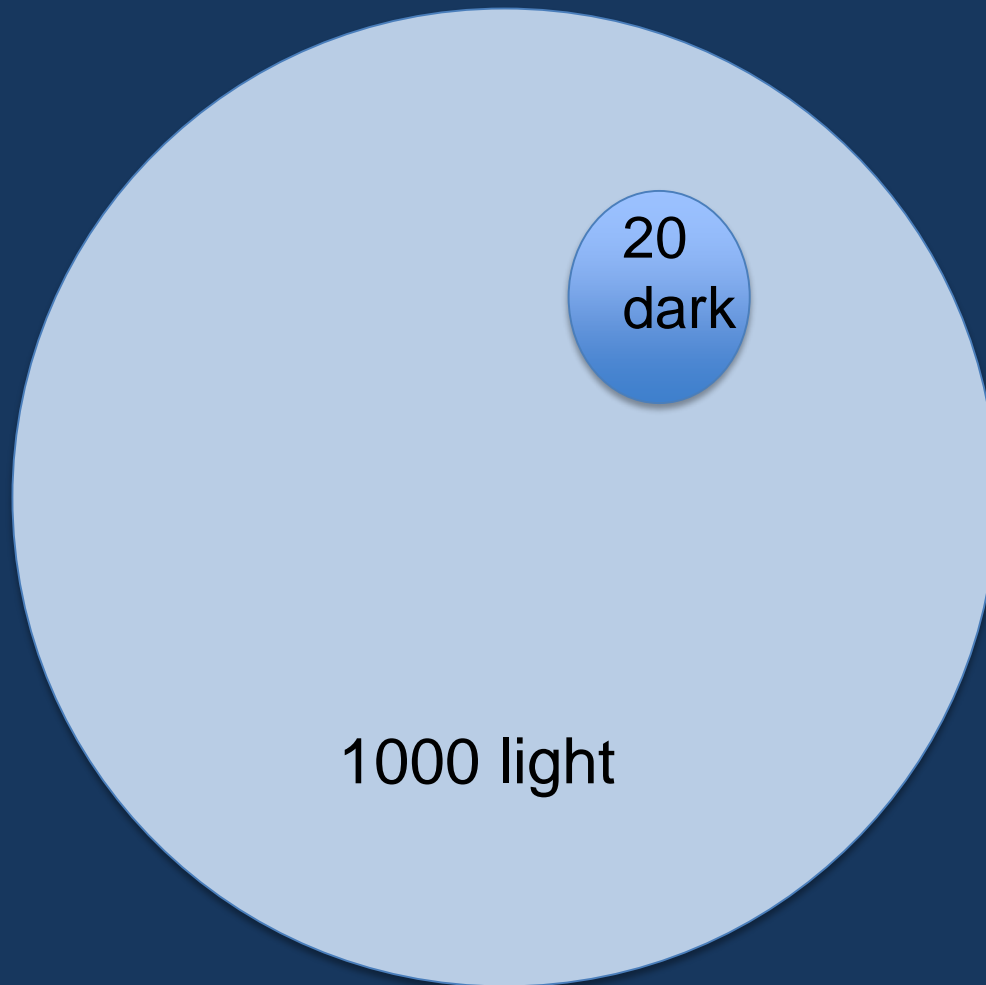
Why the Freiburg team is critical of the experts from forensics and BKA/LKA

- No public acknowledgement of data sensitivity (SNPs vs. STRs)
- No public correction of overtly positive depictions of FDP technology
- No public acknowledgement of scientific weaknesses
- Taking advantage of a politically tense situation (migration policy)
- Lessons not learnt from „phantom of Heilbronn“ case
- Stereotypical thinking and little self reflection

→ In cities such as Freiburg, the technology does not work!

Thank you very much!

A village with 1020 inhabitants



- Unknown perpetrator
- Unknown DNA found
- DNA-Analysis: dark skin pigmentation
- Correct in 98% of all cases = 19,6 persons
- Error rate: 2% = 0,4 persons

→ The police concentrates on persons with dark skin pigmentation

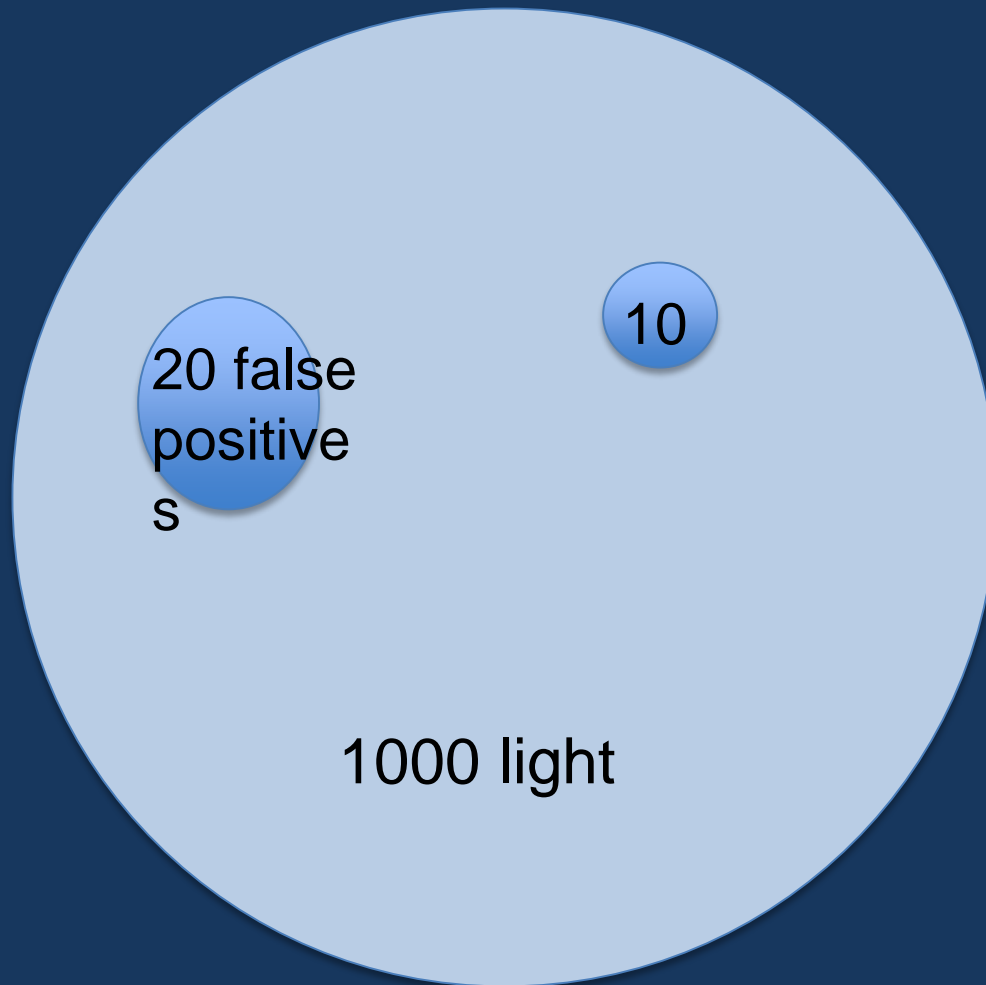


However:

Even though the test yields dark skin pigmentation,

- DNA can belong to a person with light pigmentation
- Error rate 2% = 20 Personen
- Both groups same size

Probability is 50 : 50



- If minority group is smaller than error rate \rightarrow probability of perpetrator being from majority is larger
- Even without any person with dark skin pigmentation present, the perpetrator could be a local (with light skin pigmentation)
- specific circumstances
- Minorities will be affected in much more problematic ways than the majority (because the posteriori probabilities of majorities are much more accurate)

„Biogeographical ancestry“ - misunderstandings

- „Biogeographical ancestry“ ≠ ethnicity
- „Biogeographical ancestry “ ≠ externally visible (data protection)
- „Biogeographical ancestry “ ≠ information from the passport

Sources of error: Reference databases:

- Representativity
 - Only if all regions are sampled heavily and proportionally (poorly sampled: Near East)
- Only including „locals“ marrying in the neighborhood
- complications: „mixing“; migration, cultural contacts, mobility, trade, transregional families, wars, deportations, ghettoisation, mass rape, genocides....