From DNA Tracing to DNA Phenotyping - Open Legal Issues and Risks in the new Bavarian Police Task Act (PAG) and beyond

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Is Germany facing a tidal shift in police powers? Does the border between the prosecution of criminal offences and the prevention of looming dangers, which has so far been regarded as self-evident and constitutionally necessary, fall? Will people who are suspected of maybe committing crimes in the future only on the basis of statistical data or non-individualized investigative approaches be preventively restricted in their fundamental rights and even imprisoned in the long term? Is Germany on the way to comprehensive predictive policing, for which considerable risks of discrimination will be accepted? These questions arise from the critics of the draft act on police tasks, which the Bavarian state government intends to pass this week. Beside drones and online seizure one of the crucial investigative issues is the so called "DNA phenotyping".

Accidently, the current political discussion about the approval of DNA phenotyping in German security law currently not only lacks not just an unscientific basis, but also does not take into account the constitutional framework of our fundamental rights and the prohibition of discrimination.

For almost two years now, a public discussion has been taking place about the use of genetic analyses by the police. In particular, this involves the derivation of external characteristics as colour of skin, hair, eyes and the "biogeographical ancestry" from DNA (here shortened to "DNA phenotyping"). The debate was triggered by two murders in southern Germany. DNA phenotyping is not yet permitted in Germany, either in criminal procedure law or in police law serving to avert danger. This is to change, according to politicians who advertise that the DNA of traces found at a crime scene could be used to create a "genetic phantom image" of the tracker.

The Bavarian Police Task Act

Currently, the resolution of the Bavarian state parliament with the conservative CSU majority planned for May 15 is under discussion. Article 32 of the Police Task Act (PAG) under the heading "Data Collection" in paragraph 2 permits the "molecular genetic examination of found trace material" "for the purpose of determining the DNA identification pattern, sex, eye, hair and skin colour, biological age and biogeographical ancestry of the person causing the trace [...] if averting the danger would otherwise be hopeless or significantly more difficult".

This Bavarian approval of the so-called extended DNA analysis was preceded in 2017 by corresponding initiatives of the Federal Councils of Baden-Württemberg and Bavaria on the Code of Criminal Procedure (StPO) for the purpose of criminal investigation and prosecution. These initiatives were rejected by the Federal Council because of many outstanding questions. In spring 2018, however, the coalition partners CDU/CSU and SPD at the federal level saw no fundamental need for consultation, who agreed the following: "DNA analysis will be extended to external characteristics (hair, eyes, skin colour) and age in criminal proceedings (§ 81e StPO)". The Bavarian Police Task Act also provides for the recognition of "biogeographical ancestry". Shortly before adoption, public criticism of the entire planned Bavarian law grew and cumulated in a demonstration in Munich on May 10 with more than 30,000 participants protesting against this and many other police powers. The criticism prompted

the legislative initiators in the short term to provide for a ban on investigations into characteristics other than those mentioned. On the other side, the Bavarian Home Secretary just accused the critics to use faked information instead of getting into the facts. Thus, the Bavarian government cannot be not expected to give in.

Using Sensitive Data for several Purposes

As with many other planned police measures, the CSU legislator does not see any constitutional problems with this regulation – unlike lawyers and data protectionists, for example. It is admitted that this measure interferes with the "Right to Informational Self-Determination" which is considered under the Constitution as a fundamental right. However, the state legislator sees no interference in the core area of the personal lifestyle, since only information on outwardly recognizable characteristics is recorded.

For the initiators of the act, the fact that genetic data are particularly sensitive data was not worth mentioning. This ignores the fact that, on 25 May of this year, European data protection regulations will take effect which place genetic data under special protection. The reason: genetic data that remain largely unchanged from the time "the egg is fertilised until well after a person's death" reveal highly personal information about the person, e.g. about mental or disease dispositions. They can be used to uniquely identify people by just taking tiny samples of saliva, skin, hair, blood or other tissue that we leave almost everywhere unconsciously, for example on a beer glass left behind. Since genetic data also allow statements about biological relatives, these can also be affected by analyses.

The fact that DNA data can reveal highly sensitive characteristics prompts the legislator to prohibit investigations in this respect. At the same time, he revealed that he did not understand the complex mechanisms of DNA analysis. Unlike a computer code, the characteristic data in the DNA is not stored separately. Rather, there are many interrelationships, some of which have not yet been sufficiently researched, especially if the so-called "biogeographical ancestry" is to be identified. The more meaningful this finding should be, the more snips in the DNA must be analyzed. It can never be ruled out that these may also be relevant for the most sensitive.

Just as one sensitive example, the breast cancer genes BRCA1 and BRCA2 and the blood coagulation disease of Factor XI deficiency are much more common among Ashkenazim Jews than among other population groups. There are also significant correlations between genetic markers for external characteristics and diseases, e.g. a blue eye colour correlates with a significantly higher disposition to asthma.

Legislation without sufficient Scientific Advise

Legislators so far seem to have been dazzled by scientifically false statements. They continue to claim that meaningful DNA tests are available that make it possible "to determine the continental origin of a person with a probability of more than 99.9 percent from the smallest amounts of DNA". The scientists on whom these statements are based have since corrected this assertion.

The alleged prediction probabilities are the subject of current research. The achievable probability statements depend on the characteristic searched for, the group examined, the reference group and the method used. General forensic statements about the probability of DNA characteristics are not possible; an assessment in each individual case is necessary.

The prediction of rare characteristics is usually inaccurate due to a lack of reference data. However, since the focus on a smaller group seems to be particularly useful for security purposes, the phenotyping DNA analysis method inherently presents a double risk of discrimination in relation to groups of persons with rare characteristics.

The survey is legitimized by the fact that phenotyping is only dealing with "externally visible characteristics". Of course, it´s incorrect that what can be seen by everybody could not be sensitive information. What about the fact that the hair colour often depends on age – and can be changed easily. You have to look closely at the colour of the eyes. The external recognition of "biological age" tends towards guessing. This

also applies to "continental origin or ancestry". This is based on the assumption that "biogeographical ancestry" is "ethnicity" and can be associated with defined external characteristics, which is not only prone to error but also prejudiced. Such identification of "foreigners" ties in with dark times in German history and serves prejudiced electorates rather than promoting findings from the security authorities.

Constitutional Requirements: Suitability and Proportionality

Bavarian lawmakers want to use DNA phenotyping and the determination of "biogeographical ancestry" to avert danger. Dangers are usually urgent. Combating them requires rapid and valid knowledge. Forensic science and DNA phenotyping in particular cannot provide this. To date, no one has been able to plausibly explain how statements of probability, for example on eye colour or biogeographical origin, could become relevant to averting danger. In general, the question arises as to how phenotyping can ward off a future (imminent) danger. If a trace of DNA found on an explosive, for example, is found in a database, this makes it possible to identify the so-called "dangerous person" or a person in his or her environment. This does not require phenotyping. The only possible statement would be that the "endangered" or persons from his or her environment may have certain external characteristics or that their ancestors could come from a more or less identifiable region of origin. Under perfect conditions this may be different in the case of longer-term criminal investigations, for example if the number of suspects can be reduced using such probability information.

The suitability of the measure is restricted by the fact that external features can be manipulated specifically (e.g. colouring of hair, coloured contact lenses). If there is an aptitude for criminal investigations, which is not what the amendment to the PAG is about, then at best within the investigation. The public communication of genetically derived probable perpetrators for investigative purposes entails the danger of false indications and thus the misdirection of indications as well as the danger of social discrimination against members of minority groups. In addition, there is a considerable danger of prejudice-guided interpretation of ambiguous analysis results, so-called "cognitive dissonances".

What should be legally considered?

Forensics will make progress in DNA analysis and can certainly help to solve serious crimes in individual cases. This requires a highly sensible handling of information and highly responsible conduct of investigations. Therefore, the instrument is unsuitable for emergency response. Legislative initiatives to date are completely unsuitable for investigations under the rule of law, as they provide no or no effective protective measures. There is reason to fear that the results will be used for law enforcement purposes through the back door. However, this requires a different basis of legitimacy.

The link between these measures and the extremely vague concept of "imminent danger" suggests that the line between averting imminent danger and prosecuting potential criminals should be blurred. The "endangered" is not a category of applicable law. People or groups are declared potential offenders, who are sanctioned by police law in anticipation of a later punishment. The preventive and unlimited detention also provided for potential offenders in the PAG shows this very clearly. The proposals are therefore unconstitutional and contrary to European law. They do not take into account the highly personal relevance of genetic data and the associated risks of discrimination.

Symbolic legislative actionism is dangerous. Before regulation, a serious discussion about possibilities and risks and how these risks can be averted is needed. An overarching EU-funded research project is currently underway to analyse gene markers for the colour of eyes, hair and skin and biogeographical origin. The findings of VISAGE (VISible Attributes through Genomics) must be awaited and then used as the basis for further discussion.

For reasons of protection of personal data, DNA phenotyping may only be permitted in criminal proceedings in exceptional cases of capital crimes. It

can only be approved as a last resort if no other investigative approaches promise success. And it requires requires high standards of information on potential risks and a high sense of responsibility. Especially when certain population groups can come into the focus of investigations due to external characteristics or their origin without concrete suspicions, the multifaceted sources of error must be analyzed much more precisely. Problems with insufficient or mixed tracks are known. Studies in connection with the much more advanced misjudgement research in the USA show that there are exponentially more reasons for erroneous results and interpretations in the complex analyses under discussion here than in the conventional analysis of matching traces. In order to avoid open or even covert discrimination, a transparent scientific procedure is needed that makes it possible to question the results in a qualified manner. The transparency must relate to the reference databases and the evaluation methods used. A certification procedure for the evaluation processes should be defined. Added to this are regulatory mechanisms that minimize or eliminate the potential for discrimination associated with this investigation approach. In order to avoid misinterpretations, it must be ensured that the investigating officials receive comprehensive training and advice; the results of the investigation must show that they come from a genetic analysis and indicate calculated probability values. Public searches on this basis must be ruled out.

The reference databases represent a risk for the samplers. To this end, data protection standards must be developed to prevent inadmissible use of data for improper purposes.

Thus, there is a lot of research and discussion to be done before DNA phenotyping can be permitted under safety law and carried out under the rule of law. The method is not suitable for populist legislation. Their populist campaigning shows ignorance concerning dangers of hasty action and maybe their willingness to use discrimination and exclusion of minorities to win supposedly “cheap” votes.

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