

## Press Release

### Czech public opinion on CRISPR/Cas9 technology – Food 2021

- ④ The majority (84%) of the Czech Republic has never heard of the CRISPR/Cas9 method.
- ④ A more than one-half majority (60%) of the Czech public agrees with the possibility of using the CRISPR/Cas9 method for medical purposes. The Czech public least agrees with the possibility of using this method to improve the performance of athletes (66% do not agree with this idea).
- ④ Around seven out of ten people would be willing to make changes to their DNA using the CRISPR/Cas9 method if doing so would save or give life to a child of theirs (72%) or would save their own life (70%), or if it would eliminate a serious health problem (71%).
- ④ On the matter of treating hereditary diseases, most respondents (37%) agreed with using the CRISPR/Cas9 method only in medically justified cases and on the condition that none of the patient's altered genetic information be passed on to any offspring.

Prepared by:

Radka Hanzlová

Public Opinion Research Centre, Institute of Sociology, Czech Academy of Sciences

Tel.: 210 310 587; e-mail: [radka.hanzlova@soc.cas.cz](mailto:radka.hanzlova@soc.cas.cz)

Ing. Vojtěch Hudzieczek, Ph.D.

Institute of Biophysics, Czech Academy of Sciences

Tel.: 541 517 203; e-mail: [hudzieczek@ibp.cz](mailto:hudzieczek@ibp.cz)

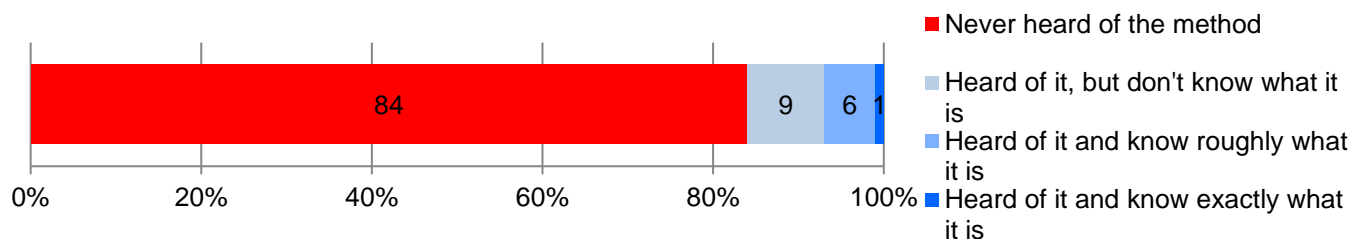


In a special survey called 'Food 2021' the Public Opinion Research Centre at the Institute of Sociology, Czech Academy of Sciences, surveyed the Czech public for their opinions on the genetically modified organisms and crops from which, among other things, the foods we eat are produced (GMOs). This block of questions also included a section on CRISPR/Cas-9 technology, the results of which are presented in this report.

According to Vojtěch Hudzieczek from the Institute of Biophysics, Czech Academy of Sciences: 'The CRISPR/Cas9 method is a modern technology for editing genomes that can be used to alter the genetic information of organisms in a way that leaves them indistinguishable from organisms that originate through traditional cultivation methods. Although crops and farm animals that come to exist through editing represent a revolution in agriculture, as through their characteristics (yield, resistance, quality of production, etc.) they can in many ways exceed existing cultivars and stock. These technologies are the subject of complex legislation, and their use is limited by patent protections. Nevertheless, their introduction into the market does not appear to be viewed by the public in as dramatically negative a light as the now traditional GMOs are.'

The first question in the survey asked respondents whether and if so to what extent they are familiar with the CRISPR/Cas9 method. According to the results of the survey (see Figure 1), the absolute majority (84%) had never heard of the CRISPR/Cas9 method. The remaining 16% had heard of the method, but only 1% had a good idea what it is, while 6% had only a rough idea, and the remaining 9% had heard of the CRISPR/Cas9 method but did not know what it is.

**Figure 1: How familiar is the Czech public is with the CRISPR/Cas9 method? (%)<sup>1</sup>**

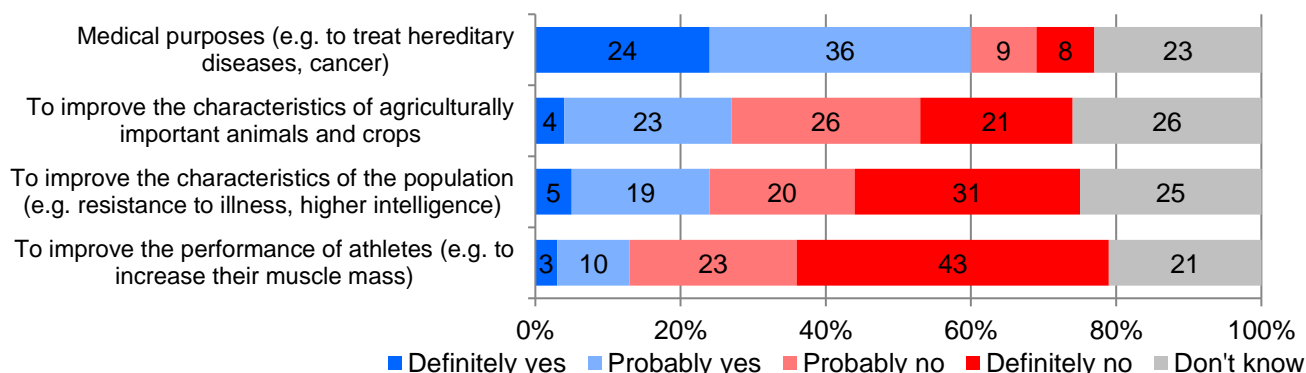


Source: Public Opinion Research Centre, Institute of Sociology, Czech Academy of Sciences, 'Food', 10–26 July 2021, 884 respondents aged 15 and over, face-to-face interviews.

After respondents answered the first question, we briefly introduced them to the CRISPR/Cas9 method, telling them that it can be used to make safe and targeted changes to the genetic information of living organisms. We then asked them several more questions to ascertain their opinion on the use of this method in certain situations (see Figure 2).

A more than one-half majority (60%) of the Czech public agree that the CRISPR/Cas9 method could be used for medical purposes – 24% strongly agree and 36% somewhat agree. Just under one-fifth (17%) of respondents expressed the opposite opinion and another under one-quarter (23%) had no clear opinion on this question and chose 'don't know' as their response. The predominant opinion among the Czech public on the use of CRISPR/Cas9 technology in other situations is negative. Approximately one-quarter (27%) of respondents agreed that the CRISPR/Cas9 method could be used to improve the characteristics of agriculturally important animals and crops, but just under one-half (47%) did not agree with this and more than one-quarter (26%) said chose 'don't know' as their response. On the possibility of using the CRISPR/Cas9 method to improve the characteristics of the general population, more than one-half (51 %) of respondents did not agree with using this technology for that purpose, and only less than one-quarter said they did agree with this use (24%), while another one-quarter (25%) were unable to answer and chose 'don't know' as their response. The Czech public agreed least with the idea of using the CRISPR/Cas9 method to improve the performance of athletes, as two-thirds (66%) of respondents disagreed with this use and only slight over one-tenth (13%) agreed with this idea. The remaining approximately one-fifth (21%) had no clear opinion on this ('don't know').

**Figure 2: Public opinion on the use of the CRISPR/Cas9 method in different situations (in %)<sup>2</sup>**



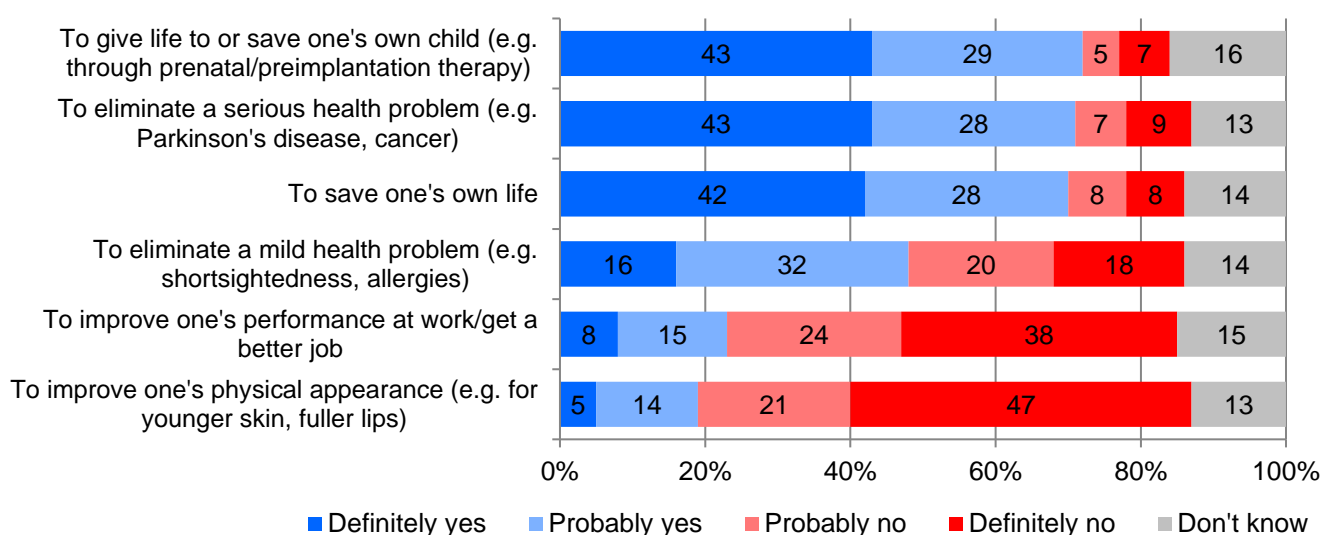
Source: Public Opinion Research Centre, Institute of Sociology, Czech Academy of Sciences, 'Food', 10–26 July 2021, 884 respondents aged 15 and over, face-to-face interviews.

<sup>1</sup> Question wording: 'Have you ever heard of the CRISPR/Cas9 method, for which the Nobel Prize in chemistry was awarded in 2020?' Response options: No, never heard of it; heard of it, but don't know what it is; heard of it and know roughly what it is; heard of it and know exactly what it is.

<sup>2</sup> Question wording: 'The CRISPR/Cas9 method can be used to make safe and targeted changes to the genetic information of living organisms. Do you think this method should be used: a) to improve the characteristics of agriculturally important animals and crops; b) for medical purposes (e.g. to treat hereditary diseases, cancer); c) to improve the performance of athletes (e.g. increased muscle mass); d) to improve the characteristics of the general population (e.g. resistance to illness, higher intelligence).' Response options: definitely yes, probably yes, probably no, definitely no.

We then asked respondents whether in certain situations they would be willing to use the CRISPR/Cas9 method to alter their own genetic information. The results are presented in Figure 3. The situation in which the respondents agreed most with using the CRISPR/Cas9 method to change their genetic information and thus would be most willing to do so was if it would save the life of their child or enable their child to be born (72% agreed, 12% disagreed), to eliminate serious health problems (71% agreed, 16% disagreed), and to save their own life (70% agreed, 16% disagreed). The Czech public largely agrees with using this method to tackle mild health problems, as almost one-half (48%) would be willing to use the CRISPR/Cas9 method to change their genetic information in this situation, just under two-fifths (38%) would not, and 14% 'don't know'. The public takes a predominantly negative view, however, of using this method to enable a person to perform better at work or help get a better job or using it to improve one's physical appearance and would thus be unwilling to use the CRISPR/Cas9 method to alter their own genetic information for these purposes. Less than one-quarter (23%) of respondents would be willing to use this method to improve their job performance or get a better job, and, by contrast, more than three-fifths were opposed to this idea, while 15% had no clear opinion and chose 'don't know' as their response. The respondents were least willing to use the CRISPR/Cas9 method to improve their appearance, as just under one-fifth (19%) would be willing to use the CRISPR/Cas9 method to change their genetic information for this purpose, but more than two-thirds (68%) would not and the remaining respondents 13% had no clear opinion ('don't know').

**Figure 3: How willing would people be to alter their genetic information using CRISPR/Cas9 technology? (in %)<sup>3</sup>**

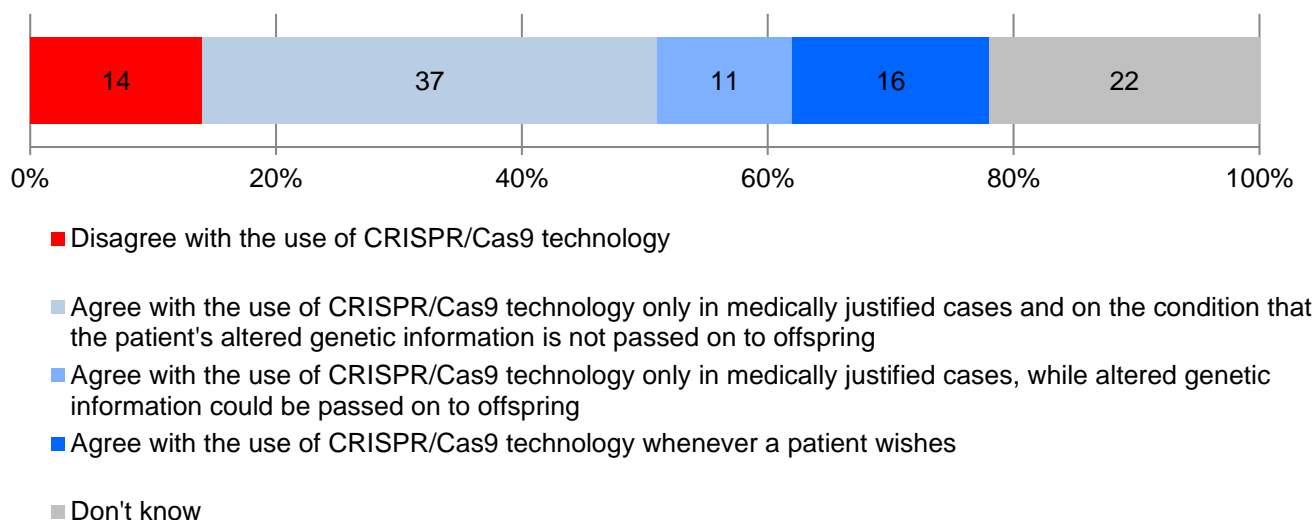


Source: Public Opinion Research Centre, Institute of Sociology, Czech Academy of Sciences, 'Food', 10–26 July 2021, 884 respondents aged 15 and over, face-to-face interviews.

In a final question we asked respondents for their opinion on using the CRISPR/Cas9 method to treat hereditary diseases. In Figure 4 we can see that most respondents, almost two-fifths (37%), agree with this use of the CRISPR/Cas9 method, but only in medically justified cases and on the condition that the patient's altered genetic information not be passed on to any offspring. Approximately one-sixth (16%) agreed with the use of the CRISPR/Cas9 method to treat hereditary disease if a patient wished it. Another 11% would agree with the use of this method for this reason but only in medically justified cases, but the patient's altered genetic information could be passed on to any offspring. Around one-seventh (14%) of respondents disagreed with using the method for this purpose. The remaining more than one-fifth (22%) of respondents had no clear answer and therefore chose 'don't know' as their response.

<sup>3</sup> Question wording: 'Would you be willing to alter your genetic information using the CRISPR/Cas9 method if: a) it would save your life, b) if would save or give life to a child of yours (e.g. through prenatal/preimplantation therapy); it would help to eliminate mild health problems (e.g. shortsightedness, allergies); d) it would help you eliminate serious health problems (e.g. Parkinson's disease, cancer); e) it would help you perform better at work or get a better job; f) it would improve your physical appearance (e.g. younger skin, fuller lips)?' Response options: definitely yes, probably yes, probably no, definitely no.

**Figure 4: Agreement/disagreement with using CRISPR/Cas9 technology to treat hereditary diseases (in %)<sup>4</sup>**



Source: Public Opinion Research Centre, Institute of Sociology, Czech Academy of Sciences, 'Food', 10–26 July 2021, 884 respondents aged 15 and over, face-to-face interviews.

<sup>4</sup> Question wording: 'In order to treat hereditary diseases, would you: disagree with using CRISPR/Cas9 technology; agree with using CRISPR/Cas9 technology only in medically justified cases and on the condition that the patient's altered genetic information not be passed on to any offspring; agree with using CRISPR/Cas9 technology only in medically justified cases, but the patient's altered genetic information could be passed on to any offspring; agree with using CRISPR/Cas9 technology whenever a patient wishes.'

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## Technical parameters of the survey

Survey:	<i>Food 2021</i>
Implementer:	<i>Public Opinion Research Centre, Institute of Sociology, Czech Academy of Sciences</i>
Project:	<i>Strategy AV21 'Food for the Future'</i>
Survey fielding dates:	<i>10 July – 26 July 2021</i>
Selection of the respondents:	<i>Quota sampling</i>
Quotas:	<i>Region (NUTS 3 regions), size of place of residence, sex, age, education</i>
Data weighting:	<i>Education X NUTS 2, age X NUTS 2, sex X region, size of place of residence X age, education X age</i>
Source data for quota sampling and data weighting:	<i>Czech Statistical Office</i>
Representativeness:	<i>Population of the Czech Republic aged 15 and over</i>
Number of respondents:	<i>884</i>
Number of interviewers:	<i>161</i>
Data collection method:	<i>Face-to-face interviews with respondents conducted by interviewers – combined CAPI and PAPI techniques</i>
Survey instrument:	<i>Standardised questionnaire</i>
Questions:	<i>PL.103, PL.104, PL.105, PL.106</i>
Report code:	<i>or211029</i>
Published on:	<i>29 October 2021</i>
Prepared by:	<i>Radka Hanzlová, Vojtěch Hudzieczek</i>

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## Glossary:

**Quota sampling:** This sampling method replicates the structure of the basic survey population (in this case the population of the Czech Republic over the age of 15) by determining the size of selected sample parameters, i.e. 'quotas'. In other words, in quota sampling the same percentages of selected characteristics in the population are reproduced in the sample. To create quotas, we use data from the Czech Statistical Office. In our surveys we set quotas for sex, age, education, region, and size of the place of residence. The sample is therefore created to ensure that the percentage shares of men and women, for example, correspond to the percentage shares of men and women in each region of the Czech Republic. Similarly, the sample reflects the different percentages of the population living in the country's different regions, and the percentage of citizens in different age categories, with different levels of education, and in different community sizes.

A representative sample is a sample of the total population whose characteristics can be validly inferred to be the characteristics of the total population. In our case this means that respondents are selected in a way that allows us to ensure that the data we obtain on them can be generalised to apply to the population of the Czech Republic over the age of 15.

**Data weighting:** A technique used to increase a sample's representativeness for selected population characteristics by assigning weights to each respondent. The weights are created using the method of iterative proportional fitting/weighting and are always within the range of 0.333 and 3.

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The Public Opinion Research Centre (CVVM) is a research department at the Institute of Sociology, Czech Academy of Sciences. It has a history that extends back to 1946, when the Czechoslovak Institute for Public Opinion Research began operating as part of the Ministry of Information. The current centre was founded in 2001 when its predecessor (the IVVM) was transferred from the Czech Statistical Office to the Institute of Sociology of the Czech Academy of Sciences. As part of a research institution the centre has a high-quality professional work environment at its disposal and is part of an institution with a reputation of excellence. As part of an academic setting the Public Opinion Research Centre must fulfil all the requirements for and maintain the highest professional standards. The main part of the centre's work is devoted to the "Our Society" research project, which conducts ten surveys each year. This public opinion research is conducted on a representative sample of the Czech population aged 15 and over and approximately 1.000 respondents take part in each survey. The omnibus form of the questionnaire means that the survey can cover a large range of subjects, which therefore regularly includes political, economic, and other generally socially topics. The survey includes both repeat questions, which can be used to observe the development of certain phenomena over time, and questions on new topics in response to current events. The long-term continuous nature of this public opinion research project makes this scientific project unique in the Czech Republic.

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**'This work was supported under AV21 Strategy of the Academy of Sciences as part of the 'Food for the Future' research programme' (<http://www.potravinav21.cz/>).**