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# INVESTIGATION OF THE CLEANING PLATE FLOW CHARACTERISTICS FOR VACUUM DNA SEPARATION

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## Abstract

*The study experimentally tested the working medium flow under the pressure drop effect in cells with sorbent in vacuum DNA separation devices. We investigated the phenomenon of uneven flow of the working medium through the cells and obtained flow characteristics for the cells. Moreover, we analyzed the change in the working medium flow rate depending on the volume of the liquid passing through the cell and the pressure drop.*

## Keywords

*Sample preparation, vacuum separation method, liquid consumption, DNA, cleaning plate*

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## References

- [1] Rebrikov D.V., ed. PTsR «v real'nom vremeni» [PCR “in real time”]. Moscow, BINOM. Laboratoriya znaniy publ., 2009. 223 p.
  - [2] Preanaliticheskiy etap. Probopodgotovka [Preanalytical phase. Sample processing]. Available at: [http://www.medteh.info/\\_fr/1/-All-short.pdf](http://www.medteh.info/_fr/1/-All-short.pdf) (accessed 15 April 2017)
  - [3] Pugachuk A.S., Chernyshev A.V. Designing of a process numerical model for vacuum separation of DNA solutions. *Vestnik MGTU im. N.E. Baumana. Ser. Mashinostroenie* [Herald of the Bauman Moscow State Technical University. Series Mechanical Engineering], 2012, spec. iss. no. 4, pp. 79–91.
  - [4] Barlow K., Perry K. Buyers' guide: Automated nucleic acid extraction systems. Centre for Evidence-based Purchasing, 2009. 60 p.
  - [5] Pugachuk A.S., Chernyshev A.V. Research of two-phase mixture flow in unit vacuum separation of DNA. *Inzhenernyy zhurnal: Nauka i innovatsii* [Engineering Journal: Science and Innovation], 2013, no. 5. Available at: <http://engjournal.ru/catalog/machin/vacuum/757.html>.
  - [6] Pugachuk A.S., Kuznetsova Yu.S., Chernyshev A.V. Development of pneumatic-and-vacuum sample processing equipment. *Molodezhnyy nauchno-tekhicheskiy vestnik*, 2012, no. 5. Available at: <http://sntbul.bmstu.ru/doc/486270.html>.
  - [7] GOST 2.797–81. Edinaya sistema konstruktorskoy dokumentatsii. Pravila vypolneniya vakuumnykh skhem [State standard 2.797–81. Unified system for design documentation. Rules for presentation of vacuum schemes]. Moscow, Standartinform publ., 2011. 5 p.
  - [8] GOST 2.796–95. Edinaya sistema konstruktorskoy dokumentatsii. Oboznacheniya uslovnye graficheskie v skhemakh. Elementy vakuumnykh system [State standard 2.796–95. Unified system for design documentation. Graphic designations in schemes. Element of vacuum systems]. Minsk, Mezhsudarstvennyy sovet po standartizatsii, metrologii i sertifikatsii publ., 1998. 12 p.
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