

CONTRACT FOR WORK

(hereinafter this "Contract"), executed pursuant to § 2586 et seq., in keeping with § 2631 et seq. of Act no 89/2012 Coll., the Civil Code, as amended, by and between:

I

Contracting Parties

- 1.1. Client:** **Česká zemědělská univerzita v Praze**
(in English: Czech University of Life Sciences Prague)
Registered seat: Kamýcká 129, 165 00 Praha – Suchdol
Acting through: Ing. Jakub Kleindienst, bursar
Bankers: Česká spořitelna, a. s.
Account number: 500022222/0800
Business ID: 60460709
VAT ID: CZ60460709
(hereinafter the "Client") on the one side

and

- 1.2. Contractor:** **NOVOGENE (HK) COMPANY LIMITED**
Registered seat: Level 54, Hopewell Centre, 183 Queen's Road East,
Hong Kong, China
Acting through: Guo Huijuan, on the basis of a power of attorney
Bankers: Citibank N.A., Hong Kong Branch
Account number: 703805888
Business ID: 61112195
VAT ID: 61112195
(hereinafter the "Seller") on the other side
(hereinafter the "Contractor")

(Both the Client and the Contractor hereinafter also "Contracting Parties" or just "Parties")

On the basis of the tender result for the project of "Whole genome bisulfite sequencing (WGBS)", implemented on the basis of public contract pursuant to Act no 134/2016 Coll., on Public Procurement, as amended, the Parties hereby execute the following public contract in the below wording:

II

Subject of Contract

- 2.1** The Contractor hereby agrees to process, at its cost, for the Client, Whole genome bisulfite sequencing (WGBS) of supplied samples delivered in aliquots (many samples together called "batch") from bark beetles and beetle related samples. The subject of contract consists of: shipping, NGS Library preparation, NGS Library quantification, NGS Library sequencing and Sequencing data quality assessment and data analysis. A total of 6 batches are expected to be delivered by the Client. The exact scope of the work is defined in Attachment No. 1 – Technical Specification and Attachment No. 2 – Tender price, both forming an integral part hereof.

- 2.2 The Contractor hereby agrees to be available at no charge to discuss the sequencing, troubleshoot, and answer questions included. Useful information for initial troubleshooting will be provided automatically with sequencing results that are difficult to sequence.
- 2.3 The Client hereby agrees to duly and timely take over the work implemented by the Contractor and pay the contract price to the Contractor as defined below.
- 2.4 The Contractor hereby agrees to perform the work with due professional care, within the agreed deadline, and within the scope and in the quality pursuant hereto.

III

Time and Place of Supply

- 3.1. The Contractor hereby agrees to implement the work in compliance herewith and hand it over to the Client within the following deadlines:

Client sample delivery:

- first delivery at the earliest after the contract came on force, DNA samples will be delivered gradually in individual sample specific aliquots (many samples per batch). Delivery of 6 to maximum 64 samples per batch is expected.

Sample quality check (QC):

- immediately after sample takeover by the Contractor, starting with sample QC.
- the Contractor will inform the Client about the results of Sample QC whether the DNA sample is appropriate for NGS library preparation and sequencing, or not. If the sample quality is not sufficient for library preparation, the client needs to be informed immediately for resending samples.

Library preparation + Library quantification:

- Contractor needs prepare library for sequencing. Negative control should be used as control during library preparation to avoid any contamination.
- Failure of library preparation on QC passed samples is contractor`s liability. Client will resend the samples.

Work completion and results delivery of each batch:

- Sequencing results and analysed data for each batch must be delivered within 60 calendar days from the sample takeover by the Contractor at the latest; unless there is a special circumstance, e.g. Sample QC failed or NGS Library Quantification will show insufficient results or failure of library preparation or failed sequencing.

Work acceptance:

- Results of each batch (delivered sequences and analysed data) will be accepted by the Client within 2 weeks after receipt from the Contractor.
- Results (sequences, counts per sample, i.e. tag combination, analysed data will be delivered in .xls, FASTA, FASTAQ, PDF, TIFF, Microsoft word, HTML etc. format as downloadable link.

Final completion of contract work:

- all work will be completed and the results will be delivered to the Client until the 30th June 2023 at the latest.

- 3.2. If the Contractor assesses the batch quality as insufficient the Client must be informed about the reason for failure or sample error within 3 weeks of sample arrival.

- 3.3. The place of the supply will be the buildings of the Faculty of Forestry and Wood Sciences of the FFWS on the address of the registered seat of the Client, Czech University of Life Sciences in Prague, Kamýčká 129, 165 00 Praha – Suchdol, Czech Republic.
- 3.4. The Contractor shall fulfil its liability to duly perform the work by its completion and handover in an acceptance proceeding to the Client. The results shall be deemed delivered on the day of delivery of the e-mail with the results in attachment; with the link for results downloading to the Client's contact person or other similar way. The acceptance proceeding will be closed by a written acceptance protocol signed by contact person of the Client, which will be sent to the Contractor by e-mail. Otherwise the work shall not be deemed duly and timely accepted. Both parties are obliged to report any changes of the contact person by e-mail to the other Contracting Party.

Contractor's contact person in acceptance proceeding and payment:

Name: xxxx
email: xxxx
phone: xxxx

Client's contact person in acceptance proceeding and payment:

Name: xxxx
email: xxxx
phone: xxxx

IV

Price and Payment Terms

- 4.1 The price of the work (unit prices) within the contracted scope implemented pursuant to the terms and conditions laid down hereby was specified on the basis of the bid of the Contractor submitted in the context of the tender as the maximum price (which may be exceeded).
- 4.2 The price for the subject of contract is specified in Attachment 2 this contract, in the amount of CZK, V.A.T: exclusive. The V.A.T. shall be calculated and levied in compliance with the applicable tax legislation valid as of the date of taxable supply.
- 4.3 In case of failure of sample quality or library preparation, the client will be resending the new set of samples and the company will charge the cost for sample transport only.
- 4.4 The payments will be executed on base of acceptance protocol pursuant to Art. 3.4 of this Contract or, if the NGS Library preparation fails, on the base of failure notification sent by the Contractor.
- 4.5 The price includes all related costs, including but not limited to the costs of shipping and potential administrative fees, taxes, customs duties, approval proceedings, required testing, conformity statement, certificates and attests, transfer of rights, insurance, etc.
- 4.6 The price shall only be calculated based on the services actually provided by the Contractor.
- 4.7 The price shall be paid by the Client in the Czech currency on the basis of the relevant tax invoice by wire transfer to the bank account of the Contractor. The Contractor shall issue the invoice in 15 calendar days from due and timely delivery and acceptance of the goods (sample group) by the Client pursuant hereto on the basis of the relevant acceptance protocol.
- 4.8 The tax invoice shall include all appurtenances of a correctly issued tax document in the sense of the relevant legislation, including but not limited to Act no 235/2004 Coll., on the Value Added Tax, as amended. The invoice shall include identification of the project and the operation programme from which the supply is financed: "Building of an excellent research team at the Faculty of Forestry and Wood Sciences of Czech University of Life Sciences on

Prague and its instrumental background focused on mitigation of the impact of climate change on forests (from the gene level to the landscape level)” (reg. ID of OP VVV CZ.02.1.01/0.0/0.0/15_003/0000433) financed from the “Operation programme Research, Development and Education”, unless otherwise stated by the Client. If the invoice misses any of the required appurtenances the Client shall be entitled to return it within its payment deadline to the Contractor for correction without getting into any delay with its payment. A new payment deadline shall start from the date of the redelivery of the corrected invoice to the Client.

- 4.9 The invoice payment deadline shall be 30 days from documented delivery to the Client. The Contractor shall deliver the invoice to the Client’s contact person pursuant to Art. 3.4 of this Contract. No other delivery shall be deemed appropriate and the Client shall not be liable to pay an invoice delivered in any other way.
- 4.10 The day of payment shall be the date of debit of the amount of the invoice from the bank account of the Client in favour of the Contractor’s bank account.
- 4.11 In accordance with Czech law, the payment of the price or its part shall be transferred to the bank account of the Contractor published by the tax administrator pursuant to § 98 of Act no 235/2004 Coll., on the Value Added Tax, as amended, if this liability is applicable to it, even if the bank account number specified in the invoice is different. If the Contractor has no published bank account pursuant to § 98 of Act no 235/2004 Coll., on the Value Added Tax, as amended, published by the tax administrator, then the Client shall affect the payment to the bank account after its publication by the tax administrator, without getting into any delay in the invoice payment. Publication of the bank account number by the tax administrator shall be notified by the Contractor to the Client without delay. This provision shall not apply if the Contractor is not liable to publish its bank account pursuant to Act no 235/2004 Coll., on the Value Added Tax, as amended.
- 4.12 If at the moment of the taxable supply the competent tax administrator publishes information that the Contractor is an unreliable taxpayer the Client as the guarantor hereby reserves the right to reduce the amount paid out to the Contractor as the purchase price of the supply by the relevant amount of V.A.T. and notify the Contractor accordingly in advance. By application of this procedure the Contractor’s claim towards the Client shall be reduced by the relevant amount of V.A.T. and the Contractor shall not be entitled to request the V.A.T. amount payment from the Client or enforce it in any manner.

V

Quality Guarantee

- 5.1 The Contractor hereby provides guarantee for the quality of every part of the supply in the length of 24 months. The warranty period shall start on the day of the work takeover by the Client, i.e. on the date of execution of the protocol on due and timely takeover of the work by the Client.
- 5.2 The Client shall be liable to notify the Contractor about any warranty defect without delay. The Contractor shall perform warranty repairs free of charge in 10 calendar days from the defect reporting. In the case of failure to comply with this deadline the Client shall be entitled to have the defect remedied by a third party at the cost of the Contractor even without prior notification of the Contractor of this procedure.
- 5.3 In the case of a warranty repair the warranty period shall be extended by the period from the defect notification to the defect remedy.
- 5.4 Complaints can be applied by the last day of the warranty period, with a complaint sent on the last day of the warranty period also deemed timely applied.

- 5.5 In the case of a defect of the work or its part which cannot be repaired the Client shall be entitled to partly withdraw from this contract within the scope of the defective supply, and request refund of the part of the price corresponding to the price of the defective part of the work.

VI Penalty Clause

- 6.1 In the case of the Contractor's delay with the work handover within the deadline pursuant hereto, the Client shall charge a contractual penalty 1.500 CZK for each commenced day of the delay.
- 6.2 The Contractor shall further be charged a contractual penalty 1.500 CZK of the work for each commenced day of the delay with remedy of complained of warranty defects within the deadline pursuant to Art. 5.2 above herein.
- 6.3 In the case of the Client's delay in the invoice payment the Contractor shall be entitled to charge a delay interest in the amount of 0.05 % of the amount due for each commenced day of the delay.
- 6.4 Circumstances excluding responsibility do not apply to the liability to pay a contractual penalty.
- 6.5 The Client shall be entitled to unilaterally offset any contractual penalty against any receivable of the Contractor towards the Client (including the Contractor's receivable represented by payment of the contract price of the work).
- 6.6 Payment of a contractual penalty is without prejudice to the rights of the Client for full damage compensation.
- 6.7 The liable party hereby agrees to pay the charged contractual penalty (penalties) within 14 days from receipt of the relevant settlement. The same deadline also applies to the delay interest.

VII Contractor's Liabilities

- 7.1 The Contractor shall be liable to implement the work in compliance herewith.
- 7.2 The Contractor shall be liable to inform the Client about the progress of the work on a regular basis and prove actual progress on the Client's request submitted in compliance herewith.
- 7.3 The Contractor shall be liable to perform all works and activities and provide all supplies to the Client for the work to be duly and timely completed within the contracted deadline and submitted to the Client for use as agreed and under the terms and conditions hereof. The Client hereby agrees to provide all necessary assistance to the Contractor to that end.
- 7.4 The Contractor hereby confirms to have been fully acquainted with the work scope and specification, with the technical, qualitative and other conditions of the work implementation, and to possess the required professional knowledge, experience and resources to be able to duly perform the work. The Contractor hereby agrees to implement the work in compliance herewith, with the applicable generally binding legislation, technical standards and to endow the work with properties and quality at least corresponding to the usual purpose of such work.
- 7.5 The Contractor shall be liable for damage caused to the Client and third parties by violation of the Contractor's liabilities laid down herein or by breach of the applicable legislation and standards.
- 7.6 The work as agreed herein, and in the Attachments, hereto shall not be changed without prior written consent of the Client.
- 7.7 The result of the Contractor's activity (the work or its part) pursuant hereto shall not be provided by the Contractor to any other party but the Client.

VII
Client's Liabilities

- 8.1 The Client shall pay the Contractor for the duly and timely performed work pursuant hereto.
- 8.2 The Client shall provide the Contractor with assistance needed for implementation hereof.

IX
Final Provisions

- 9.1 This contract may only be amended by written addenda signed by both contracting parties. All Attachments hereto form an integral part hereof. According to the law, this contract shall come to force on the day of its execution by both parties and effect on the date of its publication in the register of contracts in compliance with Act no 340/2015 Coll., on Special Terms of Effectiveness of Certain Contracts, on the Publication of these Contracts and on the Contract Register (the Contract Register Act), as amended.
- 9.2 This contract is drawn up in electronic form.
- 9.3 This contract is governed by Act no 89/2012 Coll., the Civil Code, as amended, and the related legislation. All data and information disclosed by the contracting parties to each other in the context of execution hereof are confidential and shall not be disclosed by either party to any third party and shall not be used for private purposes of the parties in contradiction to the purpose for which the information was disclosed. In the case of violation of this provision and unjust enrichment following from it to either party the unjust enrichment shall be given over to the other party.
- 9.4 In the case of invalidity of any of the provisions hereof the remaining provisions and the contract as a whole shall not be affected, unless the invalid provision is by its nature, content or circumstances of conclusion not severable from the rest of the contract content.
- 9.5 The contracting parties shall always strive for amicable settlement of any potential disputes arising from this contract or related to it. If an amicable settlement cannot be reached in 30 calendar days from the first notification of the dispute to the other party either party shall be entitled to submit its claim to the competent court of justice.
- 9.6 The Contractor agrees without reservations with publication of the full wording hereof for this contract to be able to become the subject of provided information in the sense of Act no 106/1999 Coll., on the Free Access to Information, as amended, and with publication of the full wording hereof pursuant to § 219 of Act no 134/2016 Coll., on public Procurement, as amended, and pursuant to Act no 340/2015 Coll., on Special Conditions of Effectiveness of Certain Contract, on the Publication of these Contracts and on the Contract Register (the Contract Register Act), as amended.
- 9.7 The Contractor hereby agrees that it is the liable party in the sense of § 2 (e) of Act no 320/2001 Coll., on Finance Control, as amended. The Contractor shall be liable to fulfil its liabilities as the liable party following to it from the above quoted act.
- 9.8 The integral parts of this agreement are an Attachment No. 1 – Technical specification and an Attachment No. 2 – Tender price.

9.9 Having read this contract the parties hereby agree with its content, which they say was worded seriously, certainly, comprehensibly and on the basis of their genuine free will, in witness whereof they attach their signatures below.

In Prague, on

In Hong Kong, on

On behalf of Client:
Czech University of Life Sciences Prague

On behalf of Contractor:
NOVOGENE (HK) COMPANY LIMITED

.....
Ing. Jakub Kleindienst
bursar

.....
Guo Huijuan
on the basis of a power of attorney

Service name : Whole genome bisulfite sequencing (WGBS)

- methylation-seq analysis of delivered samples of 64 gDNA samples.
- Quantitative and qualitative parameters of DNA samples:

Sample Type	Remarks	Amount	Volume	Concentration	Purity
Genomic DNA	Strongly Recommended	≥5 µg	≥20 µL	≥50ng/µL	no degradation , no contamination
	Required	≥2.5 µg			

Requirements for methodological procedure:

- Quality control of the delivered DNA samples
- 200~400 bp insert bisulfite treat DNA library
- Use of the most up-to-date platforms such as illumina *Novaseq 6000* or *Hi-seq platforms*.
- 150 bp pair-end reads
- In case any sample does not meet the specification above, the company is responsible to inform the customer immediately (no later than the term specified in article III of contract) about it. The customer will deliver new sample(s) without any purposeless delay.
- Minimum **40 million reads** (reading frames) per sample, **12Gb** raw data.
- Data quality requirement: Phred value at least Q30 for at least 80% of the reads (reading frames) and at the same time Phred value at least Q20 for at least 90% of the reads (reading frames)

- After the quality check, the following data analyses need to be done:

Data quality control (filtering reads containing adapter or with low quality; Q20, Q30, error rate distribution, GC distribution, total bases)
Mapping onto reference genome (mapping rate, duplication rate, sequencing depth, reads coverage)
mCs detection, methylation level calculation.
(1) Methylation level and frequency distribution in different sequence context (CG, CHG, CHH) (2) Methylation level and frequency distribution in different chromosomes (3) Methylation level and frequency distribution in different functional elements (promoter, 5'UTR, exon, intron, 3'UTR)
Differentially Methylated Site (DMS) detection
Differentially methylated regions (DMRs), Differentially Methylated Promoters (DMPs) detection and annotation
Function enrichment (Gene Ontology and KEGG Pathway, GO enrichment) of DMR-associated genes and DMP-associated genes
Visualization of BS seq data – i.e., Circos plots

- Consultation on sequencing and data analysis service need to be there to explain the entire pipeline to the researchers as per request and requirement.
- Updated version of the softwares needs to be used for performing the data analysis to meet high quality publication requirement.
- The analysis pipeline can be modified for the sake of high quality publication output if required.

Tender price_Whole genome bisulfite sequencing (WGBS)

	Unit Price for 1 sample	Unit	Estimated total number	Estimated value
Shipping	2400	Batch (min. 6 samples)	6	14400 CZK
Quality Check	0	Sample	64	- CZK
Price for NGS Library Preparation & Quantification	3600	Sample	64	230400 CZK
NGS Library Sequencing costs & Sequencing data Quality Check & Data Analysis	6000	Sample	64	384000 CZK
Tender price				628800.00 CZK



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