Posudek na bakalářskou práci

■ školitelský posudek ☒ oponentský posudek	Jméno posuzovatele: Madiha Kanwal Datum: 26/08/2022

Autor: Samra Muhič

Název práce: Negative regulation of the IFI16 and cGAS DNA sensing pathways

☒ Práce je literární rešerší ve smyslu zveřejněných požadavků (pravidel).

Cíle práce (předmět rešerše, pracovní hypotéza…)

The main objective of the thesis was to review the structure, properties and mutual relationship of DNA sensors; IFI16 and cGAS, and their adopter protein STING. The study also briefly explained the mechanisms that negatively regulate IFI16, cGAS and STING in context of IFN response. Moreover, the study also cited findings of the pathways that influence IFI16 and cGAS activation and repression.

Struktura (členění) práce:

The 40-page thesis contains all the relevant data and complies with all formal requirements for a bachelor's thesis. The text makes sense logically. There are three key chapters in the thesis: **1)** Chapter, **"Introduction",** explains DNA sensors and their cruicial role in innate immunity as a defensive strategy against pathogens as well as their role in sensing self-DNA. **2)** Chapter, **"DNA immune sening and its components",** not only describes the structure and mechanisms of cGAS and IFI16 and their binding to DNA but also explains the mechanisms through which STING is activated by cGAS and IFI16 and downstream production of type 1 IFN. **3)** Chapter, **"Negative regulation of the interferon responses induced by cGAS and IFI16"**, explains the mechanisms which negatively regulate Cgas, IFI16 and STING, in detail.

Jsou použité literární zdroje dostatečné a jsou v práci správně citovány?
Použil(a) autor(ka) v rešerši relevantní údaje z literárních zdrojů?

Scholarly sources are adequate and are accurately refered to in the thesis. The quantity of sources is standard and incorporates a sum of 165 articles. The writing covers primary and highly specilaized literature.The majority of the citations are from primary source and author cited review articles only where necessary.

Formální úroveň práce (obrazová dokumentace, grafika, text, jazyková úroveň):

The thesis is written in clear language and is easy to read and understand. The

images selected and modified by students complement the work, informative and add value to the study. In total, student added 7 figues which correspond well to the topic, however, the resolution of the figure 1 and 5 is not really good.

Splnění cílů práce a celkové hodnocení:

Overall, student did a good job. She was able to summerize important mechanisms involved in regulating DNA sensors particularly cGAS and IFI16 and how they activate STING. The thesis shed light on key role of cGAS and IFI16 in innate immune response to DNA. cGAS is well studied DNA sensor but IFI16 Is relatively less explored but student managed to collect all recent studies and summerized them well. The thesis contains all the up-to-date information about the topic.

Otázky a připomínky oponenta:

1) Whether methylation of dsDNA has any affect in recognition by cGAS or IFI16? DNA sensing is methylation dependent or not?
2) GAS has both cytosolic and nuclear localization but it actively participate in immune signaling via cytosolic GAS only. Can you please explain why it is in inactive form in nucleus?
3) Why particular size of the DNA fragment (16bp / 150bp) is required to induce activation of IFI16? Why signalling activation is so dependent on fragment size and is it the only factor involved to recognize dsDNA?

Návrh hodnocení školitele nebo oponenta

☒ výborně ☐ velmi dobře ☐ dobře ☐ nevyhověl(a)

Podpis školitele/oponenta:

26/08/2022

Instrukce pro vyplnění:

- Prosíme oponenty i školitele o co nejstručnější a nejvýstižnější komentáře k jednotlivým bodům (dodržujte rozsah), tučně vyznačené rubriky jsou povinnou součástí posudku.

- Při posuzování je nutno zohlednit požadavky stanovené pro vypracování bakalářských prací – viz https://www.natur.cuni.cz/biologie/studium/bakalarske-studium

- Posudek je nutné vložit přímo do SIS nebo zaslat na e-mail masek@natur.cuni.cz pro zveřejnění ve studijním informačním systému UK, a dále doručit vytištěný a podepsaný originál, který bude nezbytnou součástí protokolu o státní bakalářské zkoušce, na adresu:

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