Quantitative measurement of immune-modulatory mediators within tumors of freely moving mice utilizing in vivo microdialysis

Nadege Morisot, Julien Roeser, Holden Janssens, Marieke van der Hart and Arash Rassoulpour

1 INTRODUCTION
Monitoring changes in biochemical elements within tumors is crucial to understanding cancer biology and to helping with the development of novel therapies. Yet to date, experimental techniques enabling sensitive and quantitative measurement of the levels of small molecules contributing to tumor development have been limited in preclinical oncology models.

AIM OF THE STUDY
Implementing in vivo microdialysis to measure signaling molecules and oncometabolites levels in the tumor microenvironment of freely moving rodents

2 METHOD

Table 1. In vitro probe recovery (% of analyses of interest

<table>
<thead>
<tr>
<th>analyte</th>
<th>Adenosine</th>
<th>cAMP</th>
<th>cGMP</th>
<th>Arginine</th>
<th>Lactate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>35.51</td>
<td>29.44</td>
<td>27.86</td>
<td>30.95</td>
<td>35.56</td>
</tr>
<tr>
<td>SEM</td>
<td>2.36</td>
<td>2.83</td>
<td>3.31</td>
<td>3.86</td>
<td>3.58</td>
</tr>
</tbody>
</table>

3 Effect of probe implantation on tumor growth

4 Sensitive quantification of analytes levels

5 Differences in analytes levels between core and periphery of the same tumor

6 CONCLUSION AND PERSPECTIVES
The current results demonstrate a quantitative and sensitive method for the detection of multiple immunomodulators and oncometabolites from tumor bearing mice. In vivo microdialysis in murine tumor models may be used to elucidate the mechanisms by which therapies, such as chemotherapy and immune checkpoint inhibitors, modulate the tumor microenvironment. Microdialysis of tumors has the potential to bring new insights into the mechanisms underlying cancer development and help the discovery of next-generation therapies for cancer.