

Fc Receptor Gene in Asterias Rubens (Echinodermata): Identities with Human Lithostathine Gene and Pancreatic Stone Protein-Gene

Michel Leclerc

556 rue Isabelle Romee 45640 Sandillon, France

ABSTRACT

The Fc receptor gene of *Asterias rubens*(Echinodermata, Invertebrates)presents at least 29 % identities with Lithostathine human gene by using the following method of Compositional matrix adjust.It shows 28 % identities with Pancreatic Stone Protein- gene . The e-values are highly significative

Key words: *Asterias rubens*, Invertebrates, Sea star Fc receptor gene, Human lithostathine gene, PSP protein.

INTRODUCTION

In 2016, we have isolated the *Asterias rubens* Fc receptor gene (1). It was the first time such discovery, in Invertebrates was performed.

In the present work we analysed the identities between this gene and Human Lithostathine gene , Human PSP (Pancreatic Stone Protein) by the use of Compositional matrix adjust(2) and blasts against human'sproteins.

The *A. rubens* starting material(dna sequence in 5'-3') is the following

```
TCCATTAGGGCAATGAGTGGGACTGCGCGGCTT
GCACAGATCATCCCTTTTCTATCACGACACCTC-
GAGTCTTTCCACTTGCCGTTGCTAATCTGTAATGC-
CACACAGTTATTCTCCAATGATTCGACTCCAGA-
CAGCTCAGTTTGCTCTTCTTCGATGAAGTTTCGT-
GTAGTTGACGGGGGAATCGTTTGACCATTTCCA-
ATCGCTTTCGTTGTGTGTATCATGGAGCCCGATCCA-
CACGTCCCTGTCAATTAGGTCGGTAAGAAAATCAT-
TAATTTCTTGGTGAGTGATGGCGACCAGCCTAGCGC-
CGTCGTATTTAGTGCACCTTCTGTTTCAGCATCGAC-
CCAGCGTGCTACATCGTCTGGAATCCAGAAGCAT-
```

```
TCATCACGGAAGAGATGGCCGTTGTTTAGGCAG-
TACTGTGGTTGACCACGTACTGTTTGAAGAAGAT-
GAGCTGACCCAATAACCATCATCATCAGAATGGAA-
TCATTGTGAATTTGTTTGAGATACGTCCGATACGTC-
CGTCCGTAGATGAAAAAACTGCCGAAGTCTCTCA-
CATAATTCCACCAGGCATTGTTGATGCCTTGCTGCTC-
TATGGTTGATGCTTGGTGGCAGTCCACGAAAGAAT-
GTGCAGTTAGGGAAAGTCCAGCTTGATATCTC
```

RESULTS

Results are summarized below :

```
>1)lithostathine-1-alpha precursor [Homo sapiens]
Sequence ID: NP_002900.2 Length: 166
>RecName: Full=Lithostathine-1-alpha; AltName:Full=Islet
cells regeneration factor; Short=ICRF; AltName: Full=Islet
of Langerhans regenerating protein; Short=REG; Alt-
Name: Full=Pancreatic stone protein; Short=PSP; Alt-
Name: Full=Pancreatic thread protein; Short=PTP; Alt-
Name: Full=Regenerating islet-derived protein 1-alpha;
Short=REG-1-alpha; AltName: Full=Regenerating protein I
alpha; Flags: Precursor [Homo sapiens]
Sequence ID: P05451.3 Length: 166
>REG1A, partial [synthetic construct]
```

Address for correspondence:

Michel Leclerc, 556 rue Isabelle Romee 45640 Sandillon, France.

DOI: 10.33309/2639-8583.040103

© 2022 The Author(s). This open access article is distributed under a Creative Commons Attribution (CC-BY) 4.0 license.

Sequence ID: AIC49579.1 Length: 166
 >unnamed protein product, partial [Human ORFeome Gateway entry vector]
 Sequence ID: SJX27760.1 Length: 166
 >islet regenerating protein [Homo sapiens]
 Sequence ID: AAA36558.1 Length: 166
 >lithostathine [Homo sapiens]
 Sequence ID: AAD51330.1 Length: 166
 >Regenerating islet-derived 1 alpha [Homo sapiens]
 Sequence ID: AAH05350.1 Length: 166
 Range 1: 1 to 162

Score:76.3 bits(186), Expect:3e-13,
 Method:Compositional matrix adjust.,
 Identities:48/167(29%), Positives:76/167(45%),
 Gaps:14/167(8%)

Query 510 IGRISNKFTMIPFVMMMVIGSAHLLQT-
 VRGQPQY-CLNNGHLFRDECFWIPDDVARWVDA 334
 ++S+F+I +M+ QT Q+ C ++R C++ +D
 WVDA
 Sbjct 1 MAQTSSYFMLISCLM-
 FLSQSQGQEAQTELPQARISCPEGTNAYRSYCYFFNE-
 DRETWVDA 60

Query 333 EQKCTKYD GARLVAITDQEINDFLTDLI-----
 DRDVWIGLHDTHNESDWKWSNDSPVN 172
 + C + LV++ Q F+ LI D+VWIGLHD W
 WS+ S V+
 Sbjct 61 DLYCQNMNSGNLVSVLTAEGAFVASLIKES-
 GTDDFNVWIGLHDPKKNRRWHWSSGSLVS 120

Query 171 YTNFIEEEEQTELSGVESLENNCVALQISNG--
 KWKDSRCRDRKGMIC 37
 Y++ +++ CV+L S G KWKD C D+ +C
 Sbjct 121 YKSWGIGAPSSVN-----PGYCVSLTSTSTGFQK-
 WKDVPCEDKFSFVC 162

2)Other identities were observed with human PSP (Pancreatic stone protein) as shown below .This PSP may be assimilated to Lithostathine sensu lato

>pancreatic stone protein [Homo sapiens]
 Sequence ID: AAA60546.1 Length: 166
 Range 1: 1 to 162

Score:75.9 bits(185), Expect:3e-13,
 Method:Compositional matrix adjust.,
 Identities:47/167(28%), Positives:77/167(46%),
 Gaps:14/167(8%)

Query 510 IGRISNKFTMIPFVMMMVIGSAHLLQT-
 VRGQPQY-CLNNGHLFRDECFWIPDDVARWVDA 334
 + + + + F + I + M + + QT Q + C + + R C + + + D
 WVDA

Sbjct 1 MAQTNSFFMLISSLM-
 FLSLSQGQEAQTELPQARISCPEGTNAYRSYCYFFNE-
 DRETWVDA 60

Query 333 EQKCTKYD GARLVAITDQEINDFLTDLI-----
 DRDVWIGLHDTHNESDWKWSNDSPVN 172
 + C + LV++ Q F+ LI D+VWIGLHD W
 WS+ S V+
 Sbjct 61 DLYCQNMNSGNLVSVLTAEGAFVASLIKES-
 GTDDFNVWIGLHDPKKNRRWHWSSGSLVS 120

Query 171 YTNFIEEEEQTELSGVESLENNCVALQISNG--
 KWKDSRCRDRKGMIC 37
 Y++ +++ CV+L S G KWKD C D+ +C
 Sbjct 121 YKSWGIGAPSSVN-----
 PGYCVSLTSTSTGFQKWKDVPCEDKFSFVC 162

CONCLUSION

The sea star *A.rubens* Fc receptor gene shows identities (29 % identities) with human lithostathine gene, 28 % identities with human PSP (pancreatic stone protein). We know that Lithostathine 1 alpha -precursor is called in many ways and may be assimilated to PSP ,in certain cases, (3);They belong to Regenerating Protein super family as described in NCBI. Their rôle are enigmatic in human (3):

On the other hand, 3 classes of Echinodermata out of 5 present the Fc receptor gene (4, 5) : the Asterids, the Ophuirids and the Crinoïds. 2 classes havent not : the Echinids and the Holothurids. We recall also that the Ophuirids, with the *Ophiocoma nigr*a as a model of study, are the most evolved of Echinodermata, since the IgK *O.nigr*a shows high similitudes with the Human IgKappa. (100 % identities).

REFERENCES

1. Leclerc, M et al (2016) Clin Res Trials 2(2):152-153
2. Altschul, S.F et al(2005) Febs J 272(20):5101-5109
3. Graf, R (2020)Pancreatology 20(3):301-304
4. Leclerc, M(2018) Int.J.Biotech. Bioeng. 4(3) : 35-36
5. Leclerc, M et al (2018) J.Appl. Biotechnol. Bioeng 5(5):303-304

How to cite this article: Leclerc M. Fc Receptor Gene in *Asterias Rubens* (Echinodermata): Identities with Human Lithostathine Gene and Pancreatic Stone Protein-Gene. Clin Res Immunol 2022;4(1):8-9. DOI: 10.33309/2639-8583.040103