CLAIMS

1. A method for (a) diagnosing or predicting the risk of life-threatening deterioration or an adverse event or (b) diagnosing or prognosing the severity or (c) predicting or monitoring the success of a therapy or intervention or (d) therapy guidance or therapy stratification or (e) patient management in a patient infected with a Corona virus, the method comprising:
   - determining the level of pro-Adrenomedullin (SEQ ID No. 31) or fragment thereof in a sample of bodily fluid of said patient,
   - comparing said level of pro-Adrenomedullin or fragment thereof to a pre-determined threshold or to a previously measured level of pro-Adrenomedullin or fragment thereof, and
   - correlating said level of pro-Adrenomedullin or fragment thereof with the risk of life-threatening deterioration or an adverse event, or
   - correlating said level of pro-Adrenomedullin or fragment thereof with the severity, or
   - correlating said level of pro-Adrenomedullin or fragment thereof with the success of a therapy or intervention, or
   - correlating said level of pro-Adrenomedullin or fragment thereof with a certain therapy or intervention, or
   - correlating said level of pro-Adrenomedullin or fragment thereof with the management of said patient,

   wherein said pro-Adrenomedullin or fragment thereof is selected from the group consisting of PAMP (SEQ ID No. 32), MR-proADM (SEQ ID No. 33), ADM-NH_2 (SEQ ID No. 20), ADM-Gly (SEQ ID No. 21) and CT-proADM (SEQ ID No. 34).

2. A method for (a) diagnosing or predicting the risk of life-threatening deterioration or an adverse event or (b) prognosing the severity or (c) predicting or monitoring the success of a therapy or intervention in a patient infected with a Corona virus according to claim 1, wherein said Corona Virus is selected from the group comprising Sars-CoV-1, Sars-CoV-2, MERS-CoV, in particular Sars-CoV-2.

3. A method for (a) diagnosing or predicting the risk of life-threatening deterioration or an adverse event or (b) prognosing the severity or (c) predicting or monitoring the success of a therapy or intervention in a patient infected with a Corona virus according to claim

1 or 2, wherein said adverse event is selected from the group comprising death, organ dysfunction, shock.

4. A method for (a) diagnosing or predicting the risk of life-threatening deterioration or an adverse event or (b) prognosing the severity or (c) predicting or monitoring the success of a therapy or intervention in a patient infected with a Corona virus according to claims 1 to 3, wherein said level of pro-Adrenomedullin or fragment thereof is above a pre-determined threshold.

5. A method for (a) diagnosing or predicting the risk of life-threatening deterioration or an adverse event or (b) prognosing the severity or (c) predicting or monitoring the success of a therapy or intervention in a patient infected with a Corona virus according to claims 1 to 4, wherein said patient has a level of D-dimer equal or greater than 0.5 µg/ml, preferably equal or greater than 1.0 µg/ml.

6. A method for (a) diagnosing or predicting the risk of life-threatening deterioration or an adverse event or (b) prognosing the severity or (c) predicting or monitoring the success of a therapy or intervention in a patient infected with a Corona virus according to claims 1 to 5, wherein the level of pro-Adrenomedullin or fragment thereof is determined by contacting said sample of bodily fluid with a capture binder that binds specifically to pro-Adrenomedullin or fragment thereof.

7. A method for (a) diagnosing or predicting the risk of life-threatening deterioration or an adverse event or (b) prognosing the severity or (c) predicting or monitoring the success of a therapy or intervention in a patient infected with a Corona virus according to claims 1 to 6, wherein said determination comprises the use of a capture-binder that binds specifically to pro-Adrenomedullin or fragment thereof wherein said capture-binder may be selected from the group of antibody, antibody fragment or non-IgG scaffold.

8. A method for (a) diagnosing or predicting the risk of life-threatening deterioration or an adverse event or (b) prognosing the severity or (c) predicting or monitoring the success of a therapy or intervention in a patient infected with a Corona virus according to claims 1 to 7, wherein said patient is treated with an Anti-adrenomedullin (ADM) antibody or anti-ADM antibody fragment or anti-ADM non-Ig scaffold wherein said anti-ADM

antibody or anti-ADM fragment or anti-ADM non-Ig scaffold binds to the N-terminal and/ or mid-regional part (aa 1-42) of ADM-Gly and/ or ADM-NH_2: YRQSMNNFQGLRSFGCRFGTCTVQKLAHQIYQFTDKDKDNVA (SEQ ID No. 23).

9. Anti-adrenomedullin (ADM) antibody or anti-ADM antibody fragment or anti-ADM non-Ig scaffold for use in therapy or intervention in a patient infected with a Corona virus.

10. Anti-adrenomedullin (ADM) antibody or anti-ADM antibody fragment or anti-ADM non-Ig scaffold for use in therapy or intervention in a patient infected with a Corona virus according to claim 9, wherein said Corona Virus is selected from the group comprising Sars-CoV-1, Sars-CoV-2, MERS-CoV, in particular Sars-CoV-2.

11. Anti-adrenomedullin (ADM) antibody or anti-ADM antibody fragment or anti-ADM non-Ig scaffold for use in therapy or intervention in a patient infected with a Corona virus according to claim 9 or 10, wherein said patient has a level of pro-Adrenomedullin or fragment thereof in a sample of bodily fluid of said subject that is above a predetermined threshold or higher than a previously measured level of pro-Adrenomedullin when determined by a method according to any of claims 1 – 8.

12. Anti-adrenomedullin (ADM) antibody or anti-ADM antibody fragment or anti-ADM non-Ig scaffold for use in therapy or intervention in a patient infected with a Corona virus according to claims 9 to 11, wherein said patient has a level of D-dimer equal or greater than 0.5 µg/ml, preferably equal or greater than 1.0 µg/ml.

13. Anti-adrenomedullin (ADM) antibody or anti-ADM antibody fragment or anti-ADM non-Ig scaffold for use in therapy or intervention in a patient infected with a Corona virus according to claims 9 to 12, wherein said anti-ADM antibody or anti-ADM fragment or anti-ADM non-Ig scaffold binds to the N-terminal (amino acid 1-21) of ADM-Gly and/ or ADM-NH_2: YRQSMNNFQGLRSFGCRFGTC (SEQ ID No. 14).

14. Anti-adrenomedullin (ADM) antibody or anti-ADM antibody fragment or anti-ADM non-Ig scaffold for use in therapy or intervention in a patient infected with a Corona virus

according to claims 9 – 13, wherein said antibody is a monoclonal antibody or monoclonal antibody fragment.

15. Anti-adrenomedullin (ADM) antibody or anti-ADM antibody fragment or anti-ADM non-Ig scaffold for use in therapy or intervention in a patient infected with a Corona virus according to claim 14, wherein the complementarity determining regions (CDR´s) in the heavy chain comprises the sequences:

CDR1: SEQ ID NO: 1
GYTFSRYW

CDR2: SEQ ID NO: 2
ILPGSGST

CDR3: SEQ ID NO: 3
TEGYEYDGFDY

and the complementarity determining regions (CDR´s) in the light chain comprises the sequences:

CDR1: SEQ ID NO: 4
QSIVYSNGNTY

CDR2:
RVS

CDR3: SEQ ID NO: 5
FQGSHIPYT

16. Anti-adrenomedullin (ADM) antibody or anti-ADM antibody fragment or anti-ADM non-Ig scaffold for use in therapy or intervention in a patient infected with a Corona virus according to claim 15, wherein said antibody or fragment comprises a sequence selected from the group comprising as a VH region:

SEQ ID NO: 6 (AM-VH-C)

QVQLQQSGAELMKPGASVKISCKATGYTFSRYWIEWVKQRPGHGLEWIGEILP
GSGSTNYNEKFKGKATITADTSSNTAYMQLSSLTSEDSAVYYCTEGYEYDGFD
YWGQGTTLTVSSASTKGPSVFPLAPSSKSTSGGTAALGCLVKDYFPEPVTVSWN
SGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNHKPSNTKVDKR
VEPK

SEQ ID NO: 7 (AM-VH1)

QVQLVQSGAEVKKPGSSVKVSCKASGYTFSRYWISWVRQAPGQGLEWMGRIL
PGSGSTNYAQKFQGRVTITADESTSTAYMELSSLRSEDTAVYYCTEGYEYDGFD
YWGQGTTVTVSSASTKGPSVFPLAPSSKSTSGGTAALGCLVKDYFPEPVTVSWN
SGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNHKPSNTKVDKR
VEPK

SEQ ID NO: 8 (AM-VH2-E40)

QVQLVQSGAEVKKPGSSVKVSCKASGYTFSRYWIEWVRQAPGQGLEWMGRIL
PGSGSTNYAQKFQGRVTITADESTSTAYMELSSLRSEDTAVYYCTEGYEYDGFD
YWGQGTTVTVSSASTKGPSVFPLAPSSKSTSGGTAALGCLVKDYFPEPVTVSWN
SGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNHKPSNTKVDKR
VEPK

SEQ ID NO: 9 (AM-VH3-T26-E55)

QVQLVQSGAEVKKPGSSVKVSCKATGYTFSRYWISWVRQAPGQGLEWMGEIL
PGSGSTNYAQKFQGRVTITADESTSTAYMELSSLRSEDTAVYYCTEGYEYDGFD
YWGQGTTVTVSSASTKGPSVFPLAPSSKSTSGGTAALGCLVKDYFPEPVTVSWN
SGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNHKPSNTKVDKR
VEPK

SEQ ID NO: 10 (AM-VH4-T26-E40-E55)

QVQLVQSGAEVKKPGSSVKVSCKATGYTFSRYWIEWVRQAPGQGLEWMGEIL
PGSGSTNYAQKFQGRVTITADESTSTAYMELSSLRSEDTAVYYCTEGYEYDGFD
YWGQGTTVTVSSASTKGPSVFPLAPSSKSTSGGTAALGCLVKDYFPEPVTVSWN
SGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNHKPSNTKVDKR
VEPK

or a sequence that is > 80% identical to each of the above depicted sequences respectively, and

comprises a sequence selected from the group comprising the following sequence as a VL region:

SEQ ID NO: 11 (AM-VL-C)

DVLLSQTPLSLPVSLGDQATISCRSSQSIVYSNGNTYLEWYLQKPGQSPKLLIYR
VSNRFSGVPDRFSGSGSGTDFTLKISRVEAEDLGVYYCFQGSHIPYTFGGGTKLE
IKRTVAAPSVFIFPPSDEQLKSGTASVVCLLNNFYPREAKVQWKVDNALQSGNS
QESVTEQDSKDSTYSLSSTLTLSKADYEKHKVYACEVTHQGLSSPVTKSFNRGE
C

SEQ ID NO: 12 (AM-VL1)

DVVMTQSPLSLPVTLGQPASISCRSSQSIVYSNGNTYLNWFQQRPGQSPRRLIYR
VSNRDSGVPDRFSGSGSGTDFTLKISRVEAEDVGVYYCFQGSHIPYTFGQGTKL
EIKRTVAAPSVFIFPPSDEQLKSGTASVVCLLNNFYPREAKVQWKVDNALQSGN
SQESVTEQDSKDSTYSLSSTLTLSKADYEKHKVYACEVTHQGLSSPVTKSFNRG
EC

SEQ ID NO: 13 (AM-VL2-E40)

DVVMTQSPLSLPVTLGQPASISCRSSQSIVYSNGNTYLEWFQQRPGQSPRRLIYR
VSNRDSGVPDRFSGSGSGTDFTLKISRVEAEDVGVYYCFQGSHIPYTFGQGTKL

EIKRTVAAPSVFIFPPSDEQLKSGTASVVCLLNNFYPREAKVQWKVDNALQSGN
SQESVTEQDSKDSTYSLSSTLTLSKADYEKHKVYACEVTHQGLSSPVTKSFNRG
EC

or a sequence that is > 80% identical to each of the above depicted sequences.

17. Adrenomedullin (ADM) antibody or anti-ADM antibody fragment or anti-ADM non-Ig scaffold for use in therapy or intervention in a patient infected with a Corona virus according to any of claims 15 to 16, wherein said antibody or fragment comprises the following sequence as a heavy chain:

SEQ ID NO: 35

QVQLVQSGAEVKKPGSSVKVSCKASGYTFSRYWIEWVRQAPGQGLEWIGEILPG
SGSTNYNQKFQGRVTITADTSTSTAYMELSSLRSEDTAVYYCTEGYEYDGFDYW
GQGTTVTVSSASTKGPSVFPLAPSSKSTSGGTAALGCLVKDYFPEPVTVSWNSGA
LTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNHKPSNTKVDKKVEPK
SCDKTHTCPPCPAPELLGGPSVFLFPPKPKDTLMISRTPEVTCVVVDVSHEDPEVK
FNWYVDGVEVHNAKTKPREEQYNSTYRVVSVLTVLHQDWLNGKEYKCKVSNK
ALPAPIEKTISKAKGQPREPQVYTLPPSRDELTKNQVSLTCLVKGFYPSDIAVEWE
SNGQPENNYKTTPPVLDSDGSFFLYSKLTVDKSRWQQGNVFSCSVMHEALHNHY
TQKSLSLSPGK

or a sequence that is > 95% identical to it,
and comprises the following sequence as a light chain:

SEQ ID NO: 36

DVVLTQSPLSLPVTLGQPASISCRSSQSIVYSNGNTYLEWYLQRPGQSPRLLIYRVS
NRFSGVPDRFSGSGSGTDFTLKISRVEAEDVGVYYCFQGSHIPYTFGGGTKLEIKR
TVAAPSVFIFPPSDEQLKSGTASVVCLLNNFYPREAKVQWKVDNALQSGNSQESV
TEQDSKDSTYSLSSTLTLSKADYEKHKVYACEVTHQGLSSPVTKSFNRGEC

or a sequence that is > 95% identical to it.

18. Anti-adrenomedullin (ADM) antibody or anti-ADM antibody fragment or anti-ADM non-Ig scaffold for use in therapy or intervention in a patient with compromised lung function and/or acute respiratory distress syndrome (ARDS).

19. Anti-adrenomedullin (ADM) antibody or anti-ADM antibody fragment or anti-ADM non-Ig scaffold for use in therapy or intervention in a patient with compromised lung function and/or acute respiratory distress syndrome (ARDS) according to claim 18, wherein said patient has a Horowitz index below 300, in particular below 200, in particular below 100 and/or said patient is in need of mechanical ventilation.

20. Anti-adrenomedullin (ADM) antibody or anti-ADM antibody fragment or anti-ADM non-Ig scaffold for use in therapy or intervention in a patient with compromised lung function and/or acute respiratory distress syndrome (ARDS) according to claim 18 or 19, wherein said patient has a level of pro-Adrenomedullin or fragment thereof in a sample of bodily fluid of said subject that is above a predetermined threshold or higher than a previously measured level of pro-Adrenomedullin when determined by a method according to any of claims 1 – 8.

21. Anti-adrenomedullin (ADM) antibody or anti-ADM antibody fragment or anti-ADM non-Ig scaffold for use in therapy or intervention in a patient with compromised lung function and/or acute respiratory distress syndrome (ARDS) according to claims 18 - 20, wherein the complementarity determining regions (CDR´s) in the heavy chain comprises the sequences:

CDR1: SEQ ID NO: 1
GYTFSRYW

CDR2: SEQ ID NO: 2
ILPGSGST

CDR3: SEQ ID NO: 3
TEGYEYDGFDY

and the complementarity determining regions (CDR´s) in the light chain comprises the sequences:

CDR1: SEQ ID NO: 4
QSIVYSNGNTY

CDR2:
RVS

CDR3: SEQ ID NO: 5
FQGSHIPYT

22. Anti-adrenomedullin (ADM) antibody or anti-ADM antibody fragment or anti-ADM non-Ig scaffold for use in therapy or intervention in a patient with compromised lung function and/or acute respiratory distress syndrome (ARDS) according to claim 21, wherein said antibody or fragment comprises a sequence selected from the group comprising as a VH region:

SEQ ID NO: 6 (AM-VH-C)

QVQLQQSGAELMKPGASVKISCKATGYTFSRYWIEWVKQRPGHGLEWIGEILP
GSGSTNYNEKFKGKATITADTSSNTAYMQLSSLTSEDSAVYYCTEGYEYDGFD
YWGQGTTLTVSSASTKGPSVFPLAPSSKSTSGGTAALGCLVKDYFPEPVTVSWN
SGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNHKPSNTKVDKR
VEPK

SEQ ID NO: 7 (AM-VH1)

QVQLVQSGAEVKKPGSSVKVSCKASGYTFSRYWISWVRQAPGQGLEWMGRIL
PGSGSTNYAQKFQGRVTITADESTSTAYMELSSLRSEDTAVYYCTEGYEYDGFD
YWGQGTTVTVSSASTKGPSVFPLAPSSKSTSGGTAALGCLVKDYFPEPVTVSWN
SGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNHKPSNTKVDKR
VEPK

SEQ ID NO: 8 (AM-VH2-E40)

QVQLVQSGAEVKKPGSSVKVSCKASGYTFSRYWIEWVRQAPGQGLEWMGRIL
PGSGSTNYAQKFQGRVTITADESTSTAYMELSSLRSEDTAVYYCTEGYEYDGFD
YWGQGTTVTVSSASTKGPSVFPLAPSSKSTSGGTAALGCLVKDYFPEPVTVSWN
SGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNHKPSNTKVDKR
VEPK

SEQ ID NO: 9 (AM-VH3-T26-E55)

QVQLVQSGAEVKKPGSSVKVSCKATGYTFSRYWISWVRQAPGQGLEWMGEIL
PGSGSTNYAQKFQGRVTITADESTSTAYMELSSLRSEDTAVYYCTEGYEYDGFD
YWGQGTTVTVSSASTKGPSVFPLAPSSKSTSGGTAALGCLVKDYFPEPVTVSWN
SGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNHKPSNTKVDKR
VEPK

SEQ ID NO: 10 (AM-VH4-T26-E40-E55)

QVQLVQSGAEVKKPGSSVKVSCKATGYTFSRYWIEWVRQAPGQGLEWMGEIL
PGSGSTNYAQKFQGRVTITADESTSTAYMELSSLRSEDTAVYYCTEGYEYDGFD
YWGQGTTVTVSSASTKGPSVFPLAPSSKSTSGGTAALGCLVKDYFPEPVTVSWN
SGALTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNHKPSNTKVDKR
VEPK

or a sequence that is > 80% identical to each of the above depicted sequences respectively, and

comprises a sequence selected from the group comprising the following sequence as a VL region:

SEQ ID NO: 11 (AM-VL-C)

DVLLSQTPLSLPVSLGDQATISCRSSQSIVYSNGNTYLEWYLQKPGQSPKLLIYR
VSNRFSGVPDRFSGSGSGTDFTLKISRVEAEDLGVYYCFQGSHIPYTFGGGTKLE

IKRTVAAPSVFIFPPSDEQLKSGTASVVCLLNNFYPREAKVQWKVDNALQSGNS
QESVTEQDSKDSTYSLSSTLTLSKADYEKHKVYACEVTHQGLSSPVTKSFNRGE
C

SEQ ID NO: 12 (AM-VL1)

DVVMTQSPLSLPVTLGQPASISCRSSQSIVYSNGNTYLNWFQQRPGQSPRRLIYR
VSNRDSGVPDRFSGSGSGTDFTLKISRVEAEDVGVYYCFQGSHIPYTFGQGTKL
EIKRTVAAPSVFIFPPSDEQLKSGTASVVCLLNNFYPREAKVQWKVDNALQSGN
SQESVTEQDSKDSTYSLSSTLTLSKADYEKHKVYACEVTHQGLSSPVTKSFNRG
EC

SEQ ID NO: 13 (AM-VL2-E40)

DVVMTQSPLSLPVTLGQPASISCRSSQSIVYSNGNTYLEWFQQRPGQSPRRLIYR
VSNRDSGVPDRFSGSGSGTDFTLKISRVEAEDVGVYYCFQGSHIPYTFGQGTKL
EIKRTVAAPSVFIFPPSDEQLKSGTASVVCLLNNFYPREAKVQWKVDNALQSGN
SQESVTEQDSKDSTYSLSSTLTLSKADYEKHKVYACEVTHQGLSSPVTKSFNRG
EC

or a sequence that is > 80% identical to each of the above depicted sequences.

23. Adrenomedullin (ADM) antibody or anti-ADM antibody fragment or anti-ADM non-Ig scaffold for use in therapy or intervention in a patient with compromised lung function and/or acute respiratory distress syndrome (ARDS) according to any of claims 21 to 22, wherein said antibody or fragment comprises the following sequence as a heavy chain:

SEQ ID NO: 35

QVQLVQSGAEVKKPGSSVKVSCKASGYTFSRYWIEWVRQAPGQGLEWIGEILPG
SGSTNYNQKFQGRVTITADTSTSTAYMELSSLRSEDTAVYYCTEGYEYDGFDYW
GQGTTVTVSSASTKGPSVFPLAPSSKSTSGGTAALGCLVKDYFPEPVTVSWNSGA
LTSGVHTFPAVLQSSGLYSLSSVVTVPSSSLGTQTYICNVNHKPSNTKVDKKVEPK
SCDKTHTCPPCPAPELLGGPSVFLFPPKPKDTLMISRTPEVTCVVVDVSHEDPEVK

FNWYVDGVEVHNAKTKPREEQYNSTYRVVSVLTVLHQDWLNGKEYKCKVSNK
ALPAPIEKTISKAKGQPREPQVYTLPPSRDELTKNQVSLTCLVKGFYPSDIAVEWE
SNGQPENNYKTTPPVLDSDGSFFLYSKLTVDKSRWQQGNVFSCSVMHEALHNHY
TQKSLSLSPGK

or a sequence that is > 95% identical to it,
and comprises the following sequence as a light chain:

SEQ ID NO: 36

DVVLTQSPLSLPVTLGQPASISCRSSQSIVYSNGNTYLEWYLQRPGQSPRLLIYRVS
NRFSGVPDRFSGSGSGTDFTLKISRVEAEDVGVYYCFQGSHIPYTFGGGTKLEIKR
TVAAPSVFIFPPSDEQLKSGTASVVCLLNNFYPREAKVQWKVDNALQSGNSQESV
TEQDSKDSTYSLSSTLTLSKADYEKHKVYACEVTHQGLSSPVTKSFNRGEC

or a sequence that is > 95% identical to it.