medicament for the treatment of papillary high-risk non-muscle invasive bladder cancer (HR-NMIBC) harboring at least one FGFR3 genetic alteration selected from FGFR3-TACC3 , R248C, S249C, G370C, Y373C, or any combination thereof in a patient, wherein the FGFR inhibitor is erdafitinib base or a pharmaceutically acceptable salt thereof. In certain examples,

erdafitinib is present in a solid dosage form. In further examples, the solid dosage form is a tablet.

In some examples, in the methods and uses as described herein, the FGFR inhibitor, in particular erdafitinib, is administered at a dose of about 6 mg per day. In further examples, erdafitinib is administered at a dose of about 6 mg once daily. In still further examples, erdafitinib is administered orally. In certain examples, erdafitinib is administered orally on a continuous daily dosing schedule. In some examples, erdafitinib is administered orally at a dose of about 6 mg once daily. In some examples, erdafitinib is administered orally at a dose of about 6 mg once daily on a continuous daily dosing schedule. In further examples, the dose of erdafitinib is increased from 6 mg per day to 8 mg per day after initiating treatment if the patient exhibits a serum phosphate (PO_4) level that is less than about 5.5 mg/dL, in particular the dose of erdafitinib is increased from 6 mg per day to 8 mg per day after initiating treatment if the patient exhibits a serum phosphate (PO_4) level that is less than about 5.5 mg/dL at 14-21 days after initiating treatment. In certain examples, erdafitinib is present in a solid dosage form. In further examples, the solid dosage form is a tablet.

In another aspect, there is provided use of a fibroblast growth factor receptor (FGFR) inhibitor in the manufacture of a medicament for the treatment of papillary high-risk non-muscle invasive bladder cancer (HR-NMIBC) in a patient: (a) wherein a biological sample from the patient has been evaluated for the presence of one or more fibroblast growth factor receptor (FGFR)3 gene alterations selected from FGFR3-TACC3, R248C, S249C, G370C, Y373C, or any combination thereof; and (b) wherein the FGFR inhibitor is to be administered to the patient if the one or more FGFR3 gene alterations is present in the sample; and wherein the FGFR inhibitor is erdafitinib base or a pharmaceutically acceptable salt thereof.

Also described herein are methods of treating HR-NMIBC comprising (a) evaluating a biological sample from a patient that has been diagnosed with HR-NMIBC for the presence of one or more FGFR gene alterations, in particular one or more FGFR2 or FGFR3 alterations; and (b) administering an FGFR inhibitor, in particular at a dose of about 8 mg per day, in particular erdafitinib, more in particular erdafitinib at a dose of about 8 mg per day, at a dose of about 8 mg per day to the patient if one or more FGFR gene alterations is present in the sample.

and (b) administering an FGFR inhibitor, in particular at a dose of about 8 mg per day, in particular erdafitinib, more in particular erdafitinib at a dose of about 8 mg per day, to the patient if one or more FGFR gene alterations is present in the sample.

Also described herein are methods of treating IR-NMIBC comprising (a) evaluating a biological sample from a patient that has been diagnosed with IR-NMIBC for the presence of one or more FGFR gene alterations, in particular one or more FGFR2 or FGFR3 alterations; and (b) administering an FGFR inhibitor, in particular at a dose of about 6 mg per day, in particular erdafitinib, more in particular erdafitinib at a dose of about 6 mg per day, to the patient if one or more FGFR gene alterations is present in the sample.

Described herein is the use of an FGFR inhibitor, in particular at a dose of about 8 mg per day, in particular erdafitinib, more in particular erdafitinib at a dose of about 8 mg per day, for the manufacture of a medicament for the treatment of a patient that has been diagnosed with HR-NMIBC who harbors at least one FGFR2 genetic alteration and/or FGFR3 genetic alteration, and wherein the FGFR inhibitor, in particular erdafitinib, is administered or is to be administered after evaluation of a biological sample from the patient for the presence of one or more FGFR2 or FGFR3 gene alterations and if one or more FGFR2 or FGFR3 gene alterations is present in the sample.

Described herein is the use of an FGFR inhibitor, in particular at a dose of about 6 mg per day, in particular erdafitinib, more in particular erdafitinib at a dose of about 6 mg per day, for the manufacture of a medicament for the treatment of a patient that has been diagnosed with HR-NMIBC who harbors at least one FGFR2 genetic alteration and/or FGFR3 genetic alteration, and wherein the FGFR inhibitor, in particular erdafitinib, is administered or is to be administered after evaluation of a biological sample from the patient for the presence of one or more FGFR2 or FGFR3 gene alterations and if one or more FGFR2 or FGFR3 gene alterations is present in the sample.

Described herein is the use of an FGFR inhibitor for the manufacture of a medicament for the treatment of a patient that has been diagnosed with HR-NMIBC who harbors at least one FGFR2 genetic alteration and/or FGFR3 genetic alteration, in particular wherein the FGFR inhibitor, in particular erdafitinib, is administered or is to be administered at a dose of about 6 mg per day; and wherein the FGFR inhibitor, in particular erdafitinib, is administered or is to be administered after evaluation of a biological sample from the patient for the presence of one or more FGFR2 or FGFR3 gene alterations and if one or more FGFR2 or FGFR3 gene alterations is present in the sample.

In another aspect, there is provided use of a fibroblast growth factor receptor (FGFR) inhibitor in the manufacture of a medicament for the treatment of intermediate risk non-muscle invasive bladder cancer (IR-NMIBC) harboring at least one FGFR3 genetic alteration selected from FGFR3-TACC3, R248C, S249C, G370C, Y373C, or any combination thereof in a patient, wherein the FGFR inhibitor is erdafitinib base or a pharmaceutically acceptable salt thereof.

Described herein is the use of an FGFR inhibitor, in particular at a dose of about 8 mg per day, in particular erdafitinib, more in particular erdafitinib at a dose of about 8 mg per day, for the manufacture of a medicament for the treatment of a patient that has been diagnosed with IR-NMIBC who harbors at least one FGFR2 genetic alteration and/or FGFR3 genetic alteration, and wherein the FGFR inhibitor, in particular erdafitinib, is administered or is to be administered after evaluation of a biological sample from the patient for the presence of one or more FGFR2 or FGFR3 gene alterations and if one or more FGFR2 or FGFR3 gene alterations is present in the sample.

Described herein is the use of an FGFR inhibitor, in particular at a dose of about 6 mg per day, in particular erdafitinib, more in particular erdafitinib at a dose of about 6 mg per day, for the manufacture of a medicament for the treatment of a patient that has been diagnosed with IR-NMIBC who harbors at least one FGFR2 genetic alteration and/or FGFR3 genetic alteration, and wherein the FGFR inhibitor, in particular erdafitinib, is administered or is to be administered after evaluation of a biological sample from the patient for the

presence of one or more FGFR2 or FGFR3 gene alterations and if one or more FGFR2 or FGFR3 gene alterations is present in the sample.

Described herein is the use of an FGFR inhibitor for the manufacture of a medicament for the treatment of a patient that has been diagnosed with IR-NMIBC who harbors at least one FGFR2 genetic alteration and/or FGFR3 genetic alteration, in particular wherein the FGFR inhibitor, in particular erdafitinib, is administered or is to be administered at a dose of about 8 mg per day, and wherein the FGFR inhibitor, in particular erdafitinib, is administered or is to be administered after evaluation of a biological sample from the patient for the presence of one or more FGFR2 or FGFR3 gene alterations and if one or more FGFR2 or FGFR3 gene alterations is present in the sample.

Described herein is an FGFR inhibitor for use in the treatment of a patient that has been diagnosed with IR-NMIBC who harbors at least one FGFR2 genetic alteration and/or FGFR3 genetic alteration, in particular wherein the FGFR inhibitor, in particular erdafitinib, is administered or is to be administered at a dose of about 6 mg per day, and wherein the FGFR inhibitor, in particular erdafitinib, is administered or is to be administered after evaluation of a biological sample from the patient for the presence of one or more FGFR2 or 3 gene alterations and if one or more FGFR2 or FGFR3 gene alterations is present in the sample.

Further provided herein are methods of treating intermediate risk non-muscle invasive bladder cancer (IR-NMIBC) comprising, consisting of, or consisting essentially of, for example, administering an FGFR inhibitor at a dose of about 8 mg per day to a patient that has been diagnosed with IR-NMIBC who harbors at least one FGFR2 genetic alteration and/or FGFR3 genetic alteration. In certain examples, the patient has a papillary tumor. In some examples, the patient has an incomplete transurethral resection. In further examples, the patient exhibits a complete response to the FGFR inhibitor at about 3 months.

Further provided herein are methods of treating intermediate risk non-muscle invasive bladder cancer (IR-NMIBC) comprising, consisting of, or consisting essentially of, for example, administering an FGFR inhibitor at a dose of about 6 mg per day to a patient that has been diagnosed with IR-NMIBC who harbors at least one FGFR2 genetic alteration and/or FGFR3 genetic alteration. In certain examples, the patient has a papillary tumor. In some examples, the patient has an incomplete transurethral resection. In further examples, the patient exhibits a complete response to the FGFR inhibitor at about 3 months.

In certain examples, the FGFR2 genetic alteration and/or FGFR3 genetic alteration is an FGFR3 gene mutation, FGFR2 gene fusion, or FGFR3 gene fusion. In some examples, the FGFR3 gene mutation is R248C, S249C, G370C, Y373C, or any combination thereof. In still further examples, the FGFR2 or FGFR3 gene fusion is FGFR3-TACC3, in particular FGFR3-TACC3 V1 or FGFR3-TACC3 V3, FGFR3-BAIAP2L1, FGFR2-BICC1, FGFR2-CASP7, or any combination thereof. In certain examples, the FGFR inhibitor is erdafitinib.

What is claimed:

1. Use of a fibroblast growth factor receptor (FGFR) inhibitor in the manufacture of a medicament for the treatment of papillary high-risk non-muscle invasive bladder cancer (HR-NMIBC) harboring at least one FGFR3 genetic alteration selected from FGFR3-TACC3 , R248C, S249C, G370C, Y373C, or any combination thereof in a patient, wherein the FGFR inhibitor is erdafitinib base or a pharmaceutically acceptable salt thereof.

2. The use of claim 1, wherein the patient received Bacillus Calmette-Guérin (BCG) therapy prior to administration of said FGFR inhibitor.

3. The use of claim 2, wherein the BCG therapy is adequate BCG therapy.

4. The use of claim 2 or 3, wherein the patient is unresponsive to BCG therapy.

5. The use of claim 2 or 3, wherein the patient is BCG experienced.

6. The use of any one of the preceding claims, wherein carcinoma *in situ* is absent the.

7. The use of any one of the preceding claims, wherein the patient has carcinoma *in situ*.

8. The use of any one of the preceding claims, wherein the patient did not previously receive or is ineligible for a cystectomy or wherein the patient refuses a cystectomy.

9. The use of any one of the claims 1 to 8, wherein administration of the FGFR inhibitor provides an increase in recurrence-free survival relative to a patient population with HR-NMIBC that has been administered intravesical gemcitabine or intravesical Mitomycin C (MMC)/hyperthermic MMC.

10. The use of any one of the preceding claims, wherein the patient exhibits a complete response to the FGFR inhibitor at about 6 months.

11. The use of any one of the preceding claims, wherein the FGFR3 gene alteration is R248C, S249C, G370C, Y373C, or any combination thereof.

12. The use of any one of the preceding claims, wherein the FGFR3 gene alteration is FGFR3-TACC3.

13. The use of claim 12, wherein the FGFR3 gene alteration is FGFR3-TACC3 V1 or FGFR3-TACC3 V3.

14. The use of any one of the preceding claims, wherein a biological sample from the patient has been evaluated for the presence of the at least one FGFR3 genetic alteration prior to said treatment.

15. The use of claim 14, wherein the biological sample is blood, lymph fluid, bone marrow, a solid tumor sample, urine or any combination thereof.

16. The use of claim 15, wherein the biological sample is a solid tumor sample.

17. The use of claim 15, wherein the biological sample is urine.

18. The use of any one of the preceding claims, wherein the FGFR inhibitor is erdafitinib base.

19. The use of claim 18, wherein the FGFR inhibitor is to be administered at a dose of about 6 mg per day.

20. The use of claim 18, wherein the FGFR inhibitor is to be administered daily.

21. The use of claim 19 or 20, wherein the FGFR inhibitor is to be administered orally.

22. The use of any one of claims 19 to 21, wherein the FGFR inhibitor is to be administered orally on a continuous daily dosing schedule.

23. The use of any one of claims 19 to 21, wherein the FGFR inhibitor is to be administered at a dose of about 6 mg once daily.

24. The use of any one of the preceding claims, wherein the FGFR inhibitor is to be administered in a solid dosage form.

25. The use of claim 24, wherein the solid dosage form is a tablet.

26. Use of a fibroblast growth factor receptor (FGFR) inhibitor in the manufacture of a medicament for the treatment of papillary high-risk non-muscle invasive bladder cancer (HR-NMIBC) in a patient:

(a) wherein a biological sample from the has been evaluated for the presence of one or more fibroblast growth factor receptor (FGFR)3 gene alterations selected from FGFR3-TACC3, R248C, S249C, G370C, Y373C, or any combination thereof; and

(b) wherein the FGFR inhibitor is to be administered to the patient if the one or more FGFR3 gene alterations is present in the sample;

and wherein the FGFR inhibitor is erdafitinib base or a pharmaceutically acceptable salt thereof.

27. Use of a fibroblast growth factor receptor (FGFR) inhibitor in the manufacture of a medicament for the treatment of intermediate risk non-muscle invasive bladder cancer (IR-NMIBC) harboring at least one FGFR3 genetic alteration selected from FGFR3-TACC3, R248C, S249C, G370C, Y373C, or any combination thereof in a patient, wherein the FGFR inhibitor is erdafitinib base or a pharmaceutically acceptable salt thereof.

28. The use of claim 27, wherein the patient has a papillary tumor.

29. The use of claim 27 or 28, wherein the patient has an incomplete transurethral resection.

30. The use of any one of claims 27 to 29, wherein the patient exhibits a complete response to the FGFR inhibitor at about 3 months.

31. The use of any one of claims 27 to 30, wherein the FGFR3 gene alteration is R248C, S249C, G370C, Y373C, or any combination thereof.

32. The use of any one of claims 27 to 30, wherein the FGFR3 gene alteration is FGFR3-TACC3.

33. The use of claim 32, wherein the FGFR3 gene alteration is FGFR3-TACC3 V1 or FGFR3-TACC3 V3.

34. The use of any one of claims 27 to 33, wherein a biological sample from the patient has been evaluated for the presence of the at least one FGFR3 genetic alteration prior to said treatment, wherein the biological sample is blood, lymph fluid, bone marrow, a solid tumor sample, urine or any combination thereof.

35. The use of claim 34, wherein the biological sample is a solid tumor sample.

36. The use of claim 34, wherein the biological sample is urine.

37. The use of any one of claims 27 to 36, wherein the FGFR inhibitor is erdafitinib base.

38. The use of claim 37, wherein the FGFR inhibitor is to be administered at a dose of about 6 mg per day.

39. The use of any one of claims 27 to 38, wherein the patient received Bacillus Calmette-Guérin (BCG) therapy prior to administration of said FGFR inhibitor.

40. The use of claim 39, wherein the BCG therapy is adequate BCG therapy.

41. The use of claim 39 or 40, wherein the patient is unresponsive to BCG therapy.

42. The use of claim 39 or 40, wherein the patient is BCG experienced.

43. The use of any one of claims 27 to 42, wherein the patient has carcinoma *in situ*.

44. The use of any one of claims 27 to 43, wherein the patient did not previously receive or is ineligible for a cystectomy.

45. The use of any one of claims 27 to 44, wherein the FGFR inhibitor is to be administered in a solid dosage form.

46. The use of claim 45, wherein the solid dosage form is a tablet.