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# Product Data Sheet
# 11q13 (CCND1) FISH Probe

Catalog#: F-CCND1-(G,R,A,Y,D)

## Gene Information:

CCND1 (Cyclin D1) is a member of the cyclin family which act as regulators of CDK kinases and are characterized by large variations in protein abundance throughout the cell cycle. Cyclin D1 functions as a regulatory subunit of CDK4 or CDK6, whose activity is required for cell cycle G1/S transition. Cyclin D1 has been shown to interact with the tumor suppressor protein Rb, and Cyclin D1 expression is positively regulated by Rb. Mutations, amplification, and overexpression of Cyclin D1 are common in many tumors and may contribute to tumorigenesis.

## Clinical Relevance:

**Melanoma:**
A commercial kit for the classification of malignant melanoma includes the identification of CCND1 amplifications along with other cytogenetic abnormalities.[1] More recent studies have identified additional cytogenetic markers that increase the sensitivity and specificity of the assay. These studies have specifically shown that amplifications of CCND1 are associated with aggressive subtypes of typical Melanoma and Spitzoid Melanoma. See also MYB, MYC, RREB1, and P16 as additional markers for Melanoma subtyping.[2]

**Breast Cancer:**
CCND1 amplification has been associated with poor prognosis in estrogen receptor positive breast cancer and poor response to anastrozole or tamoxifen.[3,4]

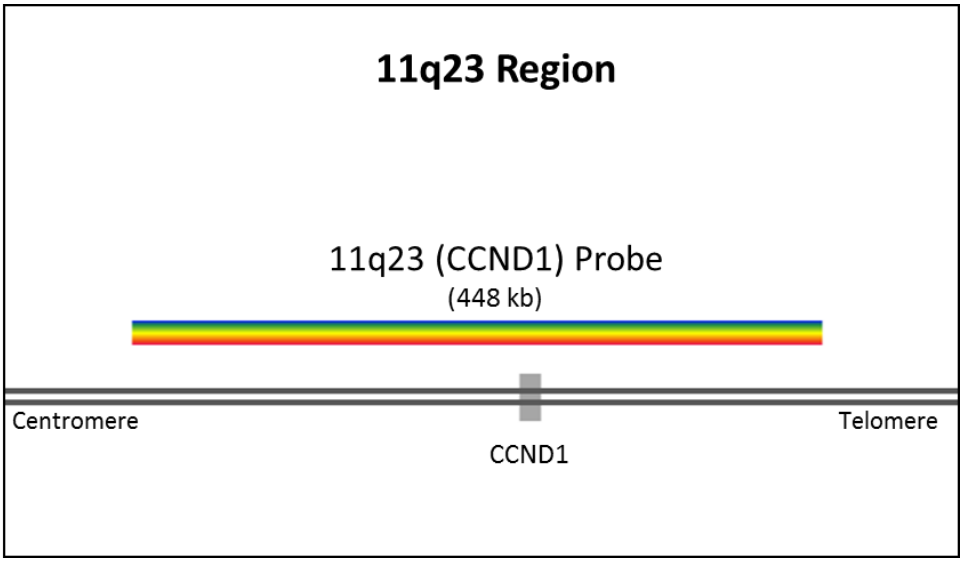
**Lung Cancer:**
CCND1 amplifications and Cyclin D1 protein overexpression is common in NSCLC and is associated with a poor prognosis.[5]

## Probe Specifications:

Probe and target gene boundaries are indicated in relation to proximity to the centromere or telomere. Positions are based on UCSC genome assembly GRCh37/hg19.

| | Target | | | Probe | | |
|---|---|---|---|---|---|---|
| Locus | Gene | Centromere | Telomere | Centromere | Telomere | Size (Kb) |
| 11q23 | CCND1 | 69,455,873 | 69,469,242 | 69,203,864 | 69,651,502 | 448 |

## Probe Map:




## Product Contents:

All individual or FISH probe cocktails are provided ready to use in hybridization buffer and can be blended with up to 4 total probes. Blocking DNA is included to suppress non-specific binding to similar sequences outside of the indicated binding sites. Researchers are advised to optimize slide processing and hybridization conditions.

Volume: 250µl
Reactions: 50 (5µl/ reaction)

## Product Options:

All FISH probes are available in 5 standard color options (Red, Gold, Yellow, Green, and Aqua). Alternative custom color options are available.

| Color | Dye | Absorbance | Emission | Ordering Code Extension |
|---|---|---|---|---|
| Red | Alexa594 | 590 | 615 | R |
| Gold | Alexa555 | 555 | 565 | D |
| Yellow | Alexa532 | 532 | 554 | Y |
| Green | Alexa488 | 495 | 519 | G |
| Aqua | DEAC | 432 | 472 | A |

# Storage:

Store at -20°C
Protect from direct light.

# References:


1. Gaiser T, Kutzner H, Palmedo G, Siegelin MD, Wiesner T, Bruckner T, Hartschuh W, Enk AH, Becker MR. Classifying ambiguous melanocytic lesions with FISH and correlation with clinical long-term follow up. Mod Pathol. 2010 Mar;23(3):413-9. doi: 10.1038/modpathol.2009.177. Epub 2010 Jan 15. PubMed PMID: 20081813.

2. Ferrara G, De Vanna AC. Fluorescence In Situ Hybridization for Melanoma Diagnosis: A Review and a Reappraisal. Am J Dermatopathol. 2016 Apr;38(4):253-69. doi: 10.1097/DAD.0000000000000380. PubMed PMID: 26999337.

3. Roy PG, Pratt N, Purdie CA, Baker L, Ashfield A, Quinlan P, Thompson AM. High CCND1 amplification identifies a group of poor prognosis women with estrogen receptor positive breast cancer. Int J Cancer. 2010 Jul 15;127(2):355-60. doi:10.1002/ijc.25034. PubMed PMID: 19904758.

4. Lundgren K, Brown M, Pineda S, Cuzick J, Salter J, Zabaglo L, Howell A, Dowsett M, Landberg G; TransATAC investigators. Effects of cyclin D1 gene amplification and protein expression on time to recurrence in postmenopausal breast cancer patients treated with anastrozole or tamoxifen: a TransATAC study. Breast Cancer Res. 2012 Apr 4;14(2):R57. PubMed PMID: 22475046; PubMed Central PMCID: PMC3446392.

5. Betticher DC, Heighway J, Hasleton PS, Altermatt HJ, Ryder WD, Cerny T, Thatcher N. Prognostic significance of CCND1 (cyclin D1) overexpression in primary resected non-small-cell lung cancer. Br J Cancer. 1996 Feb;73(3):294-300. PubMed PMID: 8562333; PubMed Central PMCID: PMC2074441.