Supplementary Table 1. Detailed clinical, laboratory, pathologic, molecular and follow-up characteristics of 252 patients (training and validation sets) prospectively submitted for BiliSeq analysis.

| Set | Patient Gender | Age (years) of PSC | Race | Ethnicity | Specimen for BiliSeq** Location of Brushing/Biopsy* Location of Specimen for BiliSeq** | Site of Metastasis | Site of Metastasis Biopsy | Site of Metastasis Resection | Site of Metastasis Partial Hepatectomy | Site of Metastasis Resection | Clinicoradiographic Impression | Negative/Positive (CS) | Follow-up | Method of Follow-up | Alive, Months of Follow-up | Alive, Months of Follow-up |
|-----|----------------|-------------------|------|-----------|-------------------------------------|-------------------|--------------------------|-------------------------------|-----------------------------------|-------------------------------|----------------------------|-------------------------|-----------------|------------------|-----------------------------|-----------------------------|-----------------------------|
High-grade dysplasia of the bile duct

Pancreatic Ductal Adenocarcinoma

Whipple Resection

Decreased, 10

KRAS p.G12R

Alive, 5

Clinicoradiographic Impression

Brushings

Biopsy of Omental Metastasis

Mixed HCC-Cholangiocarcinoma

Concurrent ERCP Biopsy

Alive, 7

KRAS p.G12D

Clinicoradiographic Impression

Negative

N/A

N/A

N/A

ERBB2 p.D769Y, CDKN2A copy number loss,


Both Specimens: Negative

Partial Hepatectomy

N/A

N/A

N/A

Cholangiopathy

Both Specimens: Negative

Liver Transplantation

Alive, 20

Decreased, 5

Negative

Incidental biliary duct pathology of brushings/biopsies was defined as at least high-grade dysplasia or at least suspicious for malignancy.